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Excavations at Eduardo Quiroz Cave, British Honduras (Belize)

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AVID M. PENDERGAST

Excavations at Eduardo Quiroz Cave, British Honduras (Belize)

with analysis of faunal material by
HOWARD G. SAVAGE

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Introduction

In 1963, prior to the beginning of my association with the Royal Ontario Museum, I commenced what was envisioned as a programme of excavation of caves in the Cayo District of British Honduras (Belize). The site selected for investigation, Eduardo Quiroz Cave, was one of a group which I examined during a short reconnaissance in 1961 (Pendergast, 1962) which had as its stimulus A. H. Anderson's description of Cayo caves (Anderson, 1962). The cave was chosen for its extent, the quantity of pottery visible on the surface of deposits in the several chambers, and the differences which separated it from the neighbouring Awe Cave-Las Cuevas site, which was partly excavated in 1957 (Digby, 1958). The excavation of Eduardo Quiroz Cave was supported by a grant from the National Science Foundation of the United States, made to the University of Utah; the latter institution generously granted me leave from teaching for one quarter to undertake the investigations, and provided both a vehicle and the field equipment necessary for the project. In addition to the material assistance provided by the Department of Anthropology of the University of Utah, I enjoyed the enthusiastic support of Drs. Charles E. Dibble and Robert Anderson, the latter then acting chairman of the department, in all aspects of the programme and extending long after completion of the field work.

In the field, I was aided as I had been earlier and was to be many times afterward by A. H. Anderson, Archaeological Commissioner of British Honduras. Mr. Anderson's assistance went far beyond that required by his position in government, and even included opening his home to my wife, my brother, and myself both before and after our sojourn in the bush. It was Anderson's interest in Quiroz which led me to the site in the first place, and he continued throughout the project to offer his knowledge of the region and its archaeology in solution of the many problems we faced. We were also aided in numerous ways by Mr. Wahib Habet, proprietor of the San Luis sawmill, who not only provided raw materials for our refurbishing of the lumber camp at Millionario, but also lent us a bulldozer for clearing of the hurricane-torn bush which two Maya workers and I had been rather ineffectually chopping for several days, in the hope of opening a road to the base of the low cliff in which the cave lies. Sr. Amado Castillo, Forest Guard in the Millionario area, assisted us throughout our stay at the old lumber camp, and Mr. Owen Phillips, then director of the Augustine Forest Station, showed us every possible courtesy during the few days we spent at the station while readying our camp for occupancy. We recall with gratitude the help of many others, ranging from Mr. Daniel Habet of the town then known as El Cayo (now San Ignacio), who provided most of our supplies and handled payments to the families of the workmen, to mahogany cutters at Millionario who took up tools after their long workdays to help us set up camp. All of these people, and many more whose names we never knew, introduced us to the kindness and friendliness which we have since come to know as hallmarks of the Belizean people.

In a small project such as this, it is possible to acknowledge the efforts of the excavators in a way often impractical for larger programmes; furthermore, one feels even more strongly in a small group the assistance which each individual has rendered. We began the work at Quiroz with just two men, Elias Alfaro and Eduardo Cocom of the village of Succotz, near El Cayo. When camp-building and bush-clearing were done, three fellow villagers joined the first two; these were Eufracio Cunil, and Feliz and Monico Uc. All of the men worked with the highest enthusiasm and energy, despite the rather difficult conditions in the cave, including a cold and damp atmosphere which produced everything from sniffles to aching joints. In later years these five Succotz men, joined by others from the village, worked with us at Altun Ha, and the two Uc brothers are with us still, as I hope they will be for many years to come. To say that the work at Quiroz would have been impossible without the efforts of the Maya excavators sounds very much like the usual cliché, but it is nonetheless true, and bears repeating.

The excavation of Quiroz was followed by a brief period of testing at the nearby site of Maria Camp, a small surface centre lying approximately midway between Quiroz and the major site of Caracol (Fig. 1). The Maria Camp excavations were subsequently reported (Pendergast, 1965a), and a preliminary discussion of the work at Quiroz, covering the principal artifacts and features but omitting analysis of the pottery, was also published (Pendergast, 1964). At the time of first publication of the Quiroz excavation results, lack of laboratory space made study of the moderate-sized ceramic collection impossible, and it was not until 1967 that this work could be undertaken. The initial sorting, classification, and description were carried out by my wife, who also undertook all colour determinations. Mr. Richley C. Crapo, graduate student in the Department of Anthropology at Utah, assisted in the sherd analysis, and also in the photography of vessels from the collection. Drawings of a small part of the ceramic collection were made by Miss Heli Ottas, formerly Assistant Scientific Illustrator in the Office of the Chief Archaeologist, Royal Ontario Museum, but most of the illustrations of pottery and other artifacts which adorn this report are the products of the talented pen of Mrs. Georgina Hosek, who succeeded Miss Ottas. Mr. Claus Breede, Scientific Illustrator, drew the Chamber 1 plan and Burial 4, and redrew the cave plan from my original much less well-executed effort. Identifications of the materials of some of the lithic artifacts were made by Dwayne D. Stone and G. B. Baefcke, graduate students in the Department of Geology, University of Utah. I am indebted also to Drs. John M. Legler, Zoology Department, and Gordon L. Grosscup, then of the Department of Anthropology, University of Utah, for identification of turtle remains and some of the freshwater shells from the excavations, respectively. Dr. Howard Savage, Research Associate in the Ornithology Department, Royal Ontario Museum, kindly provided a comprehensive analysis of both the unmodified and the modified faunal material, to which are appended the data provided by Legler and Grosscup, as well as my identifications of marine shells.

In addition to the materials recovered during our investigations, we were able to examine a number of vessels, many of them whole or reconstructable, which were collected by Anderson during his initial exploration of Quiroz in 1960-1961. This work was carried out in Belize City in the summer of 1967 following Anderson's death, as part of an attempt at organising and recording some of the collections and projects which his ill health had forced him to leave in an unfinished state. I am grateful to the Ministry of Natural Resources and Trade for permitting us to use the house which had been the Andersons' home as a place for study of the Quiroz and other collections during the time in which I served as acting Archaeological Commissioner, and for support of my efforts to preserve the data which Anderson had collected. My wife made drawings of all of the Quiroz vessels in the government collection, and these are included in the present report with some additions made by Mrs. Hosek. Unfortunately, some artifacts recovered by Anderson, as well as his notes on the excavation and exploration he undertook, were lost in Hurricane Hattie in 1961, but apart from these items his collection and ours represent very nearly the full body of archaeological material from the cave, barring the rather unlikely possibility that chambers remain undiscovered in Quiroz after both his and our intensive surveys. The total collection is by no means rich or extensive, and the site itself is not nearly as large as some of the major caves of the Cayo District; yet Quiroz adds much to our understanding of the Maya use of caves, as well as to the ceramic history of the southern Cayo District, a region which remains today, six years after our brief penetration of it and more than forty years after the first archaeological work there, a nearly complete blank in Maya prehistory.

D.M.P.

The Site

SETTING

Eduardo Quiroz Cave lies approximately 1.5 km. south-southeast of the forest camp at Millionario (Fig. 1), and about .5 km. east of the road linking Millionario with Las Cuevas-Awe Cave, in the part of the southern Cayo District known as the Chiquibul. The site is roughly at Lat. 16° 45′ N. and Long. 88° 53′ W., at an elevation of approximately 1900 feet. Prior to Hurricane Hattie in 1961, the area around Quiroz was, like most of the surrounding region, covered by dense high forest, with a canopy sufficiently solid in most areas to produce a partly clear understorey, with the floor often so free of entanglements of bush and vines that visibility was relatively good. The hurricane changed all this, for in the Chiquibul the winds cut into small basins and ravines with terrific force, often churning round and round until the bush was made to resemble a huge rubbish pile, which indeed it had become. Very little is known of the effects of the winds on surface sites, but the felling of much of the bush resulted in concealment of, if not damage to, the many caves which undermine the Chiquibul. Though the two Succotz Mayas who began the work in 1963 had been with Anderson and me on our trip to the site in 1961, their bush-keen eyes were strained beyond their limits in searching through the debris for the mouth of Quiroz, and it was only with the aid of a local mahogany worker that we finally found the site, even though we had passed within a few dozen metres of the entrance several times. The forest has not yet recovered from the blow dealt it by Hattie, and even today one stumbles through roots and branches, now enmeshed in miles of vines, where once there were the clear vistas and easy going of the high bush.

The vegetation of the Millionario-Quiroz area is classified by Wright *et al.* (1959) as Semi-Evergreen Forest 80-100 feet high, falling into the Ramon-Chiquebul category. In addition to the two trees (*Trophis racemosa* [L.] Urban and *Achras chicle* Pittier, respectively) which give the forest type its name, mahogany (*Swietenia macrophylla* King) is abundant (about one or two to the acre) in the area, as are ironwood (*Dialium guianense* Aubl.) and, unfortunately, chechem or poison wood (*Cameraria belizensis* Standl.), an unwelcome companion for the careless machete-wielder. I could not, or did not attempt to, identify many of the large trees of the area in 1963, as I could see only their roots heaved out of the ground beside our trail. I suspect that undisturbed forest around Quiroz would have resembled that already described for the environs of Actun Balam (Pendergast, 1969, p. 4), with the exception of ceiba and Santa Maria, neither apparently present in any appreciable quantity in the Quiroz area. The soils of the area are essentially similar to those of the Actun Balam region (Pendergast, 1969, pp. 4-5), with considerable areas of Chacalte stony clay and clay (Wright *et al.*, 1959, p. 75) on the hill slopes, grading into skeletal soils in the more rugged sections. As at Actun Balam, the archaeologist is quickly made aware of the clays which occur on level areas, for it is in these that his vehicle, his boots, and often his

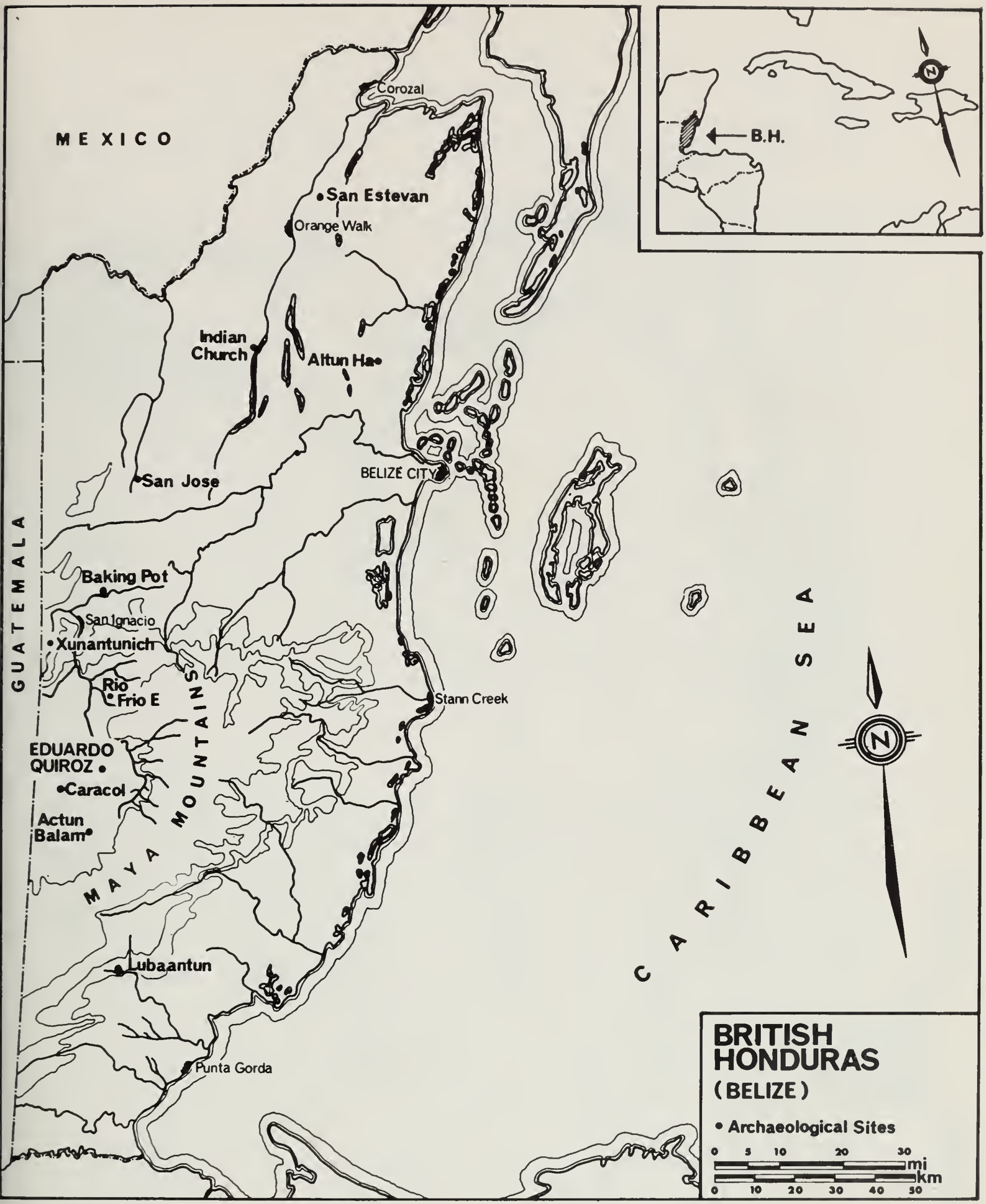


Fig. 1 Map of British Honduras (Belize) showing location of Eduardo Quiroz cave, other archaeological sites, and principal modern settlements. Inset: the position of Belize in southern Mesoamerica.

good humour are all too frequently mired. The general impression one gets of the area around Quiroz, excluding level areas among the many hills and cliffs, is that of terrain and soils not especially well-suited to agriculture, something which may have influenced ancient use of the region. There are well-documented agricultural terraces some 5 km. northwest of Quiroz, and mahogany workers have reported similar terracing on hillsides less

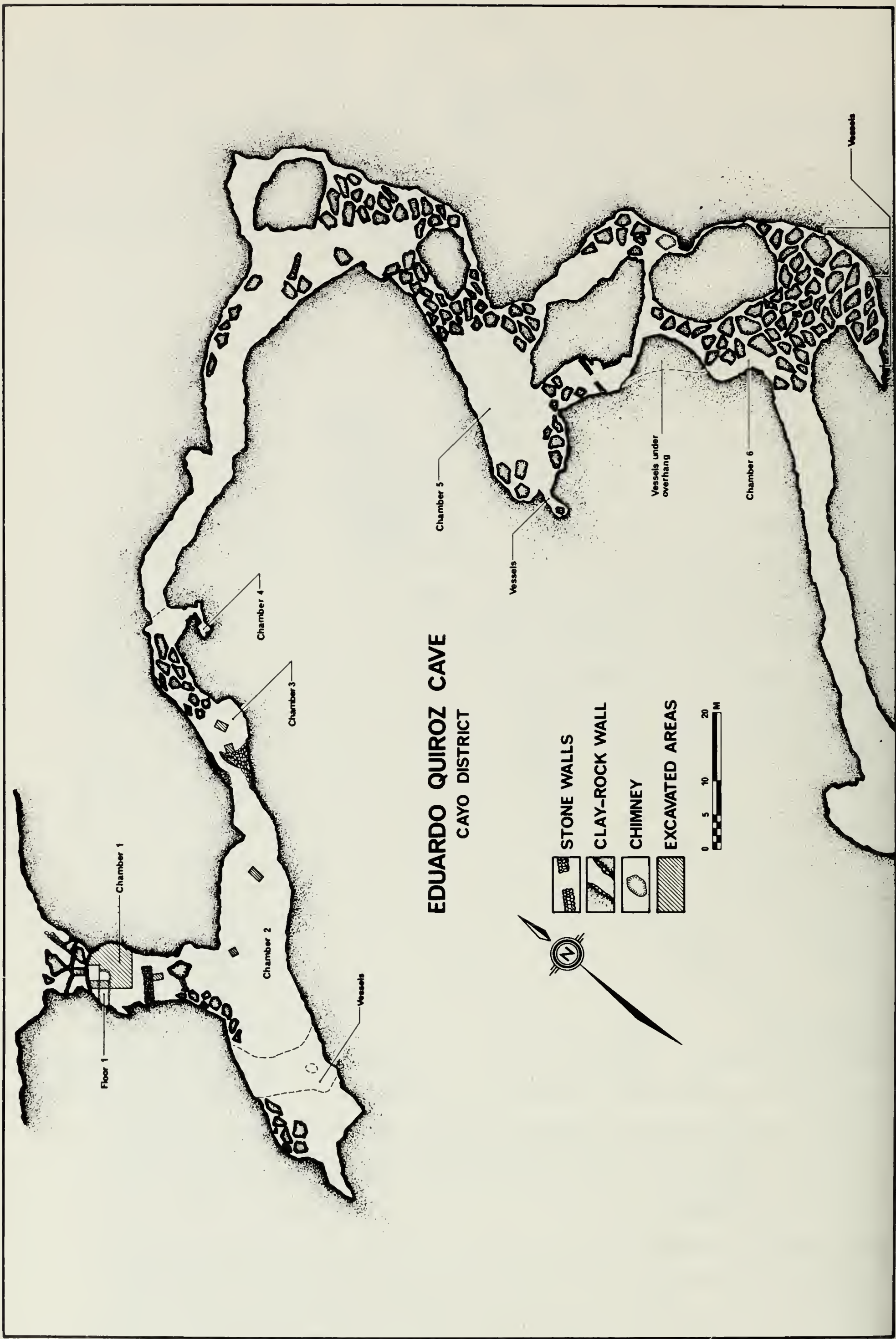


Fig. 2 Plan of the cave, showing locations of archaeological features and excavations.

than half a kilometre from the cave, which suggests that the ancient Maya may have attempted to alter the natural soil distribution and structure to produce a more agriculturally attractive environment. The absence of a nearby water supply undoubtedly affected use of Quiroz; the nearest water source is a rather poor spring at Millionario, situated in the midst of a small marsh.

In addition to the Chiquibul sites already mentioned, data are available from Tzimin Kax (Thompson, 1931) and to a lesser extent from Cubeta Cave (Pendergast, 1962 and 1968). No surface site is reported from the immediate vicinity of Quiroz, but the proximity of the cave to the Las Cuevas-Awe Cave complex makes it quite likely that these two sites are intimately related. Excavations were carried out at Las Cuevas by Anderson in 1957, while Digby undertook testing within the large cave which underlies the surface site (Digby, 1958), but no report of Anderson's work has been published. Other caves are known to occur in the area around Las Cuevas-Awe Cave, and one, Casconil Cave, was briefly examined by a party including Mr. Anderson, my brother, several of our Maya workers, and myself in 1963. With the exception of a small part of the material from Awe Cave, no comparisons are possible between this complex and Quiroz, a difficulty which it is hoped may eventually be remedied through publication of the results of Anderson's excavations.

SITE DESCRIPTION

The site of our investigations lies at the top of a fairly precipitous talus slope approximately 17 metres high, with the nearly-vertical face of a limestone cliff surrounding and rising above the cave entrance. As with most caves in similar situations in the Chiquibul, there is no indication at Quiroz of artificial alteration of the slope to produce easier access, nor is there any recognizable levelling or other modification of the area immediately in front of the cave mouth. The entrance is divided into two openings by a large vertical slab, apparently spall from the cliff above, which very nearly conceals the site from below (Plate 1). Behind the slab lies a small area strewn with rockfall from the ceiling, forming the entrance to the first chamber (Chamber 1) of the series of six which make up the cave (Fig. 2; Plate 2). This first chamber, roughly 9 by 15 metres, was the scene of principal ancient activity within the cave, as well as the site of the major excavations. Running roughly southeast from the entrance, the chamber is separated into two areas by an artificial stone wall, one of a number of modifications of the natural cave form effected by the ancient Maya discussed in a separate section, below. Maximum ceiling height in Chamber 1 is approximately 16-18 metres, with a sharp drop in the area of the stone wall to a height above the slope leading to Chamber 2 of 4 metres or less. A small alcove leads off from the west side of the main chamber, near the only plaster-floored construction in the cave, and several small niches and crevices occur in the upper walls and ceiling, none apparently containing any archaeological remains.

Chamber 2, approximately 10 by 50 metres, has its long axis NNE-SSW, and is marked by a large ledge at the southern end, upon which several vessels were discovered. At the northern end, the chamber pinches down both laterally and vertically to form a small sloping area which leads sharply downward to an artificially-constructed passageway, described together with other construction elements in a section which follows. The passage leads to Chamber 3, which is about 5 metres square, and bordered at its north end by extensive rockfall and a vertical face about 2 metres high. The appearance of this end of the chamber suggests that the small room may have been formed through collapse of part of the original floor of the cave, perhaps in an area undermined by a small chamber now visible as the lower part of Chamber 3. At the south side of Chamber 3 is a small sloping passageway leading downward to a tiny area designated Chamber 4, the roof of which lies just barely above the floor level of the larger adjoining room. The shape of the entrance passage to Chamber 4 may have been somewhat altered by the Maya, but it remains a rather bruising means of access to the small stalactite-filled area.

From the top of the vertical face at the north end of Chamber 3, a narrow passageway trends tortuously eastward for approximately 60 metres and then turns southward, widening to about 15 metres, most of which area is covered with masses of fallen rock from the ceiling. This area in turn gives onto Chamber 5, an area free of ceiling rock though surrounded by huge blocks, with its long axis running N-S. Length of Chamber 5 is about 27 metres, and width is 12 metres at the widest point; ceiling height ranges from less than 8 to as much as 15 metres. The floor of the chamber is somewhat irregular, sloping up rather sharply near the southern end; at this end of the room is a small tube, barely large enough to be squeezed through by a person of my size, with several vessels along its west edge and a huge, immeasurably deep chimney at what is probably the inner end. I discovered the tube by accident while searching for the small passage between chambers 5 and 6, and learned of the existence of the chimney only when I had inched on my back headfirst along the tube far enough to be sure that I was not in the right passage, at which point I wriggled out, turned over to free my arms and permit use of my headlight, and worked my way back to where I had been, to find that I had been just about to push myself over the top of the chimney, which was more than large enough to admit my rather bulky form. I found a small rock and dropped it into the chimney, but neither it nor further experimental missiles produced any sound, so I do not know how deep my potential tomb is. Difficulties of mapping in the tube prevented inclusion of the feature in the cave plan.

Finding the correct passage from Chamber 5 leads one eastward through a partly modified slit opening into Chamber 6, the largest of the series. The chamber, a huge dome-shaped area, has a maximum ceiling height of 25 metres and a floor area of about 25 by 50 metres, but most of the chamber is piled high with masses of ceiling fall, including some truly gigantic blocks. Exploring Chamber 6 was a task which we could never complete to our satisfaction, as the insane jumble of stones forced us to climb up and down, back and forth, in our search for archaeological materials, often unintentionally coming back to our starting points without having done more than remove sections of skin on the sharp edges of the blocks. The ancient Maya probably faced almost the same problem, for their use of the chamber seems to have been restricted to placement of vessels and other material around the edges of the area, suggesting that most of the rockfall occurred prior to human use of the chamber. One part of the rockfall is concealed beneath a huge mound of bat guano and soil, the accumulation resulting from introduction of material through a vertical chimney 2 to 4 metres in diameter which leads upward from Chamber 6 to the surface of the cliff above. Two of the workers, using tree roots and strangler fig for support, climbed out through the chimney and searched the clifftop in the process of cutting a trail back to the entrance, but they encountered no signs of occupation or use of the area above the cave.

A long passageway runs south-southeast from Chamber 6, and is so free of rockfall as to give the appearance of having been intentionally cleared of rubble. Some sherds were recovered from the surface of the thin layer of soil within the passage, as were bits of charcoal similar to those found elsewhere in the rear chambers, but there were no other signs of use. The passageway opens into a somewhat larger area at its southern end, but this room is so low-ceilinged as to be an unlikely site for ancient activity. The ceiling drops until it nearly meets the floor at the southern end of the area, and while an extremely adventurous speleologist might have proceeded farther, we did not. The total length of the cave from the entrance to our stopping point is approximately 350 metres, with a slope upward of about 7 to 8 metres from front to back. Unlike some caves of the Chiquibul, Quiroz has at present no stream running through it, though cutting lines on the walls indicate that flowing water was the principal agent in the cave's formation. Relatively little water now drips from the ceiling in many parts of the cave, but there are extensive stalactite and stalagmite formations, as well as several columns, reflecting greater amounts of drip water in earlier times. Small stalactites, principally of the "soda-straw" type, occur in many small pockets throughout the cave, and most are still active, providing a source of unpleasant cold shocks to the back of the neck of an unwary archaeologist. Embedding of sherds in stalagmites and flowstone indicates that the amount of drip water was greater at the time of Maya use of the cave and for some period thereafter than it is today, a critical point in evaluation of the importance of the cave to the ancient Maya.

ARTIFICIAL CONSTRUCTION

At the west side of the small level area just within the cave entrance the Maya constructed a low, crude dry-laid wall of irregular limestone blocks, apparently to close off a small, low-ceilinged niche which originally formed part of the western edge of the outer area of Chamber 1. The wall extends parallel with the chamber wall to meet a large slab around which are piled a number of rough blocks which partly separate the niche from the main area of the chamber. From the large slab a line of small stones runs across the entrance area, forming the second of a series of three small terraces or steps which lead from the level of the base of the huge rock at the cave mouth down to the floor of Chamber 1, 214 cm. below. None of the terraces appears to have been more than a levelled area of earth retained by a line of stones; there were no traces of plaster adhering to any of this construction, as is typical of most Maya modification of the natural form of caves.

At the front of Chamber 1, just beyond the base of the lowest entrance step, there was a plaster floor (Floor 1) extending 390 cm. across the chamber from the west wall, with a maximum width of 190 cm. These dimensions, plus the absence of postholes or other indications of construction or occupation atop the floor, suggest that it may have been built for ceremonial purposes, perhaps serving as the final element in the series of terraces or steps described above. Further data on the floor appear in the section on excavation, below.

A small rear portion of Chamber 1 is separated from the remainder by a dry-laid masonry wall, composed primarily of large irregular limestone blocks which were probably collected within the cave. The wall extends 550 cm. eastward from the west wall of the chamber, and has a maximum height of 150 cm., with the thickness at the base being 150 cm., tapering to approximately 100 cm. at the top. An opening averaging 200 cm. in width occurs between the end of the wall and the east side of the chamber, providing access to the rear part of Chamber 1, which gives onto a slope leading to Chamber 2, at the base of which there is a mound of stones, some rather haphazardly formed into a low wall which serves as a boundary between the two chambers.

The most extensive modification of the cave occurs in the area between chambers 2 and 3, where there was originally a low, wide slit connecting the two rooms. The Maya filled most of the slit with large limestone blocks probably collected from surrounding areas, leaving only a narrow passageway (Plate 3). In Chamber 2, this dry-laid construction is faced with clay containing small pieces of limestone, a surfacing which extends through the passageway itself, while in Chamber 3 the block fill is partially exposed to view, with only the lower area covered by a mass of soil 108 cm. in thickness, forming an artificial slope leading down from the passage to the chamber floor. The passageway is 350 cm. in length, and varies in height from 46 to 81 cm., and in width from 55 to 65 cm. The archaeologist struggling through this small tunnel wonders, even when he allows for the smaller size of the Mayas, how any priest entering the rear chambers of the cave for ceremonial purposes could have maintained his dignity, let alone the cleanliness of his robes, in such a place.

The final construction lies in the main passage between chambers 5 and 6, where again a wall of limestone blocks was built to reduce the size of an already uncomfortably small passageway. There is also a wall built in a manner similar to that of the facing of the Chamber 2-Chamber 3 passage, which serves to seal off a small niche in the north side of the tunnel. As in the other modification of a connection between chambers in Quiroz, and in similar construction in other Chiquibul caves, the intent seems to have been to make movement from one area to another as difficult as possible, perhaps partly to increase the aura of mystery surrounding the cave or to keep hidden from the eyes of onlookers the ceremonies carried out in the deeper recesses of the caverns. With the exception of the plaster floor and the associated terraces or steps, the construction in Quiroz consists entirely of divisions within or between chambers very probably built with materials collected within the cave itself, parallelling the pattern encountered in many other sites in the Chiquibul.

Excavation

INITIAL INVESTIGATIONS

The first excavation in Quiroz was undertaken by A. H. Anderson in 1960, as part of the initial exploration of the site. In addition to collecting a number of sherds and fragmentary vessels from the surface of the deposit in the various chambers, Anderson carried out a small test in Chamber 5 at the entrance to the passageway leading to Chamber 6. The notes covering this work were destroyed, and hence we had to rely on Anderson's discussion of his work as well as the memories of men who worked for him, for data on location of the trench and on materials recovered therefrom. The excavation was shallow, extending to a depth of not more than 35 cm., but it produced a burial, apparently a primary inhumation in extended dorsal position, accompanied by several spatulate bone pins (lost in Hurricane Hattie) and a single polychrome vessel. We cannot now be certain whether any of the pieces recorded in 1967 is that which was associated with the burial, but there is some basis for suspecting that a fragmentary deep round-side bowl (Fig. 6m) came from the interment. As far as we could determine, Anderson undertook no excavation in other parts of the cave, and I do not know what led him to choose the rear part of Chamber 5 for investigation, unless it was his hope that early Pre-Classic or Archaic materials might be found beneath the rockfall. He expressed this hope to me in 1961 and 1963, and we continued work in the area of his test with this in mind, but found the rockfall to lie directly upon sterile clay in all areas which we were able to examine. None of the vessels recovered by Anderson is identified as to provenance within the cave, and there is no way of knowing whether all sherds ultimately joined to form a vessel were recovered from a single spot. As far as is known, Anderson was the first person to enter the cave after it was reported by its discoverer, the forest guard for whom the site is named; hence it can be assumed that the problems arising from uncontrolled excavation or removal of surface material in other Cayo District caves do not affect the Quiroz material.

Our own excavations were preceded by a thorough surface collection, in which virtually all visible ceramic material was bagged by lot according to area of provenance, a pattern often involving division of a single chamber into several collecting zones in an attempt to determine whether significant patterns might be discernible in the distribution of sherds. For several of the chambers, the surface collection comprises almost all material recovered, as in many cases we found that no archaeological deposit was present, or that the deposit consisted of no more than a few centimetres of dust and guano containing a small number of sherds. The largest amounts of surface pottery were recovered from the entrance area and Chamber 1, parts of Chamber 2, and the passageway between chambers 3 and 5, with heavy concentrations of sherds in many small niches and crevices in almost all chambers, but especially dense in chambers 2 and 3. In most cases, the niche and crevice lots consisted of olla (storage jar) sherds which had clearly been intentionally shoved into these small side areas, and were often carefully stacked, with no apparent attempt at segregating pieces of any one vessel in individual stacks. The Summary, p. 112, discusses the possible significance of these occurrences.

Surface investigation of the site also included location, recording, and removal of groups of whole or nearly complete vessels encountered in recesses and other side areas throughout the cave (Fig. 2). Groups of vessels found in chambers 2, 5, and 6 included in all but one case storage jars of various shapes and sizes, large shallow dishes or basins, and smaller round-side bowls, some decorated with encircling stamped designs. In chambers 5 and 6, the vessels were encountered in small, low-ceilinged niches around the peripheries of the rooms, often in the less accessible areas. In Chamber 2, vessels were grouped in a small niche at the back of a ledge forming the floor of a small pocket above the ceiling of the chamber (Fig. 2 and Plate 4), while others lay along the outer edge of the ledge, in an area overlooking the central part of the chamber. The ancient Maya must have reached the ledge just as we did, with the aid of a bush ladder, and there were signs here, as elsewhere in the cave, that torches had been used for illumination, for fragments of charcoal were strewn over the ledge surface. In each of the areas in which vessels were found, the ceiling was completely clear of stalactite formation, in sharp contrast with surrounding regions which were often festooned with "soda straw" stalactites. The incrustation of flowstone and lime on the floors of the vessel areas indicates that absence of stalactites is not a result of absence of drip water, and in fact many of the "soda straws" in the surrounding areas are still active; this suggests that the ceilings of the vessel areas were intentionally scraped clean of stalactites, perhaps to facilitate collection of drip water in the vessels below. The significance of drip water from caves, or *zuhuy ha,* has been discussed by Thompson (1959, pp. 125-127), and its collection appears to have been one of the critical elements in ancient Maya use of Quiroz.

CHAMBER 1

Following the surface investigations, excavation was begun in Chamber 1 in the area immediately in front of the wall at the rear of the main area, with a pit 2 metres long by 1 metre wide placed parallel to the wall. As there were no indications of natural stratification, excavation was carried out by artificial levels of 20 cm. In the first of these, a bed of burned earth and charcoal was encountered, extending from 3 to 13 cm. below the surface of the deposit, and limited to the northern corner of the pit. A similar area of burning lay at the south end of the pit, its upper surface 8 cm. below the deposit surface. The greyish, ashy material extended over an area 60 cm. N-S by 40 cm. E-W, and varied in thickness from 5 to 8 cm., overlying a bed of fine yellow-brown soft soil, apparently also a product of burning. In neither of these cases were there indications of a hearth of any sort, but the nature and extent of the features suggest that they represent human activity, probably connected with occupation of the cave. Most of the sherds from the first 20 cm. level lay immediately above or within the ash lenses. From a depth of approximately 15 cm. downward, the sherd yield was extremely low, and at 42 cm. a stratum of yellow clay containing medium to large rocks was encountered. This was sectioned, with no artifact yield, to a depth of 87 to 95 cm., where the base stone of the cave floor was reached. As a result of the disappointing yield of the first pit, efforts were concentrated in other chambers for a time; following this work, additional investigation was undertaken in Chamber 1 in the form of a series of trenches which eventually resulted in removal of almost all the deposit within the chamber, including that underlying the plaster floor near the entrance. When it became apparent that the low yield of the first pit was not parallelled throughout the deposit, levels of 10 cm. were adopted to permit more precise determination of stratigraphic relationships within the fill. In no part of the chamber was the deposit thicker than 90 cm., and the average amount was 40 to 50 cm. over most of the area, with greater quantities occurring only along the east wall in an area where a slope in the apparently uneven chamber floor may have created a logical spot for dumping. There may also have been some attempts on the part of the Maya to level the more irregular parts of the area with stones and clay, producing an artificial deposit without sherd or other artifactual content.

The Chamber 1 deposit was shown by the additional trenches to be composed largely of soft, uncompacted brownish-black soil with extensive admixture of small flecks of charcoal, and frequent small lenses of ash. This, plus the presence of faunal remains and other detritus of living, suggests that the chamber was the scene of habitation, though as noted above the sole floor in the room seems ill-suited to use as a dwelling area, and the uncomfortable nature of the cave plus the absence of a nearby water supply would probably have made Quiroz an unattractive home even for the hardy Maya. Whatever the manner of deposition of the fill in Chamber 1, it was clear from the outset that the deposit could not provide a basis for establishment of a ceramic sequence, as the material was certainly mixed to some extent, very probably randomly deposited over the chamber floor, and not clearly stratified. However, analysis of the sherd sample utilizing the artificial excavation levels does yield some probably meaningful data on temporal relationships among certain pottery types, and perhaps on the period of use of Quiroz as well. Apart from these data and others derivable from the ceramics, the significant elements resulting from

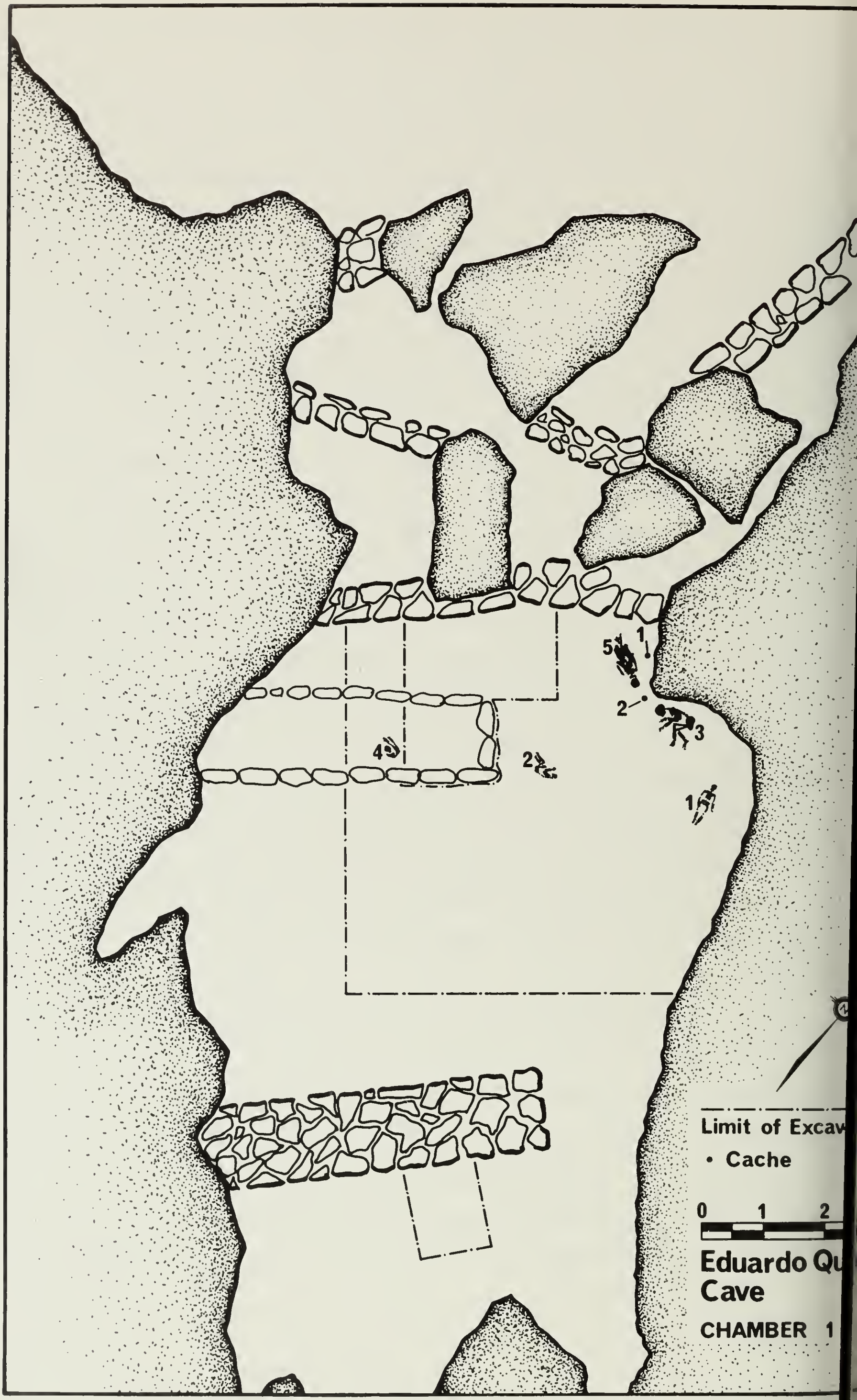


Fig. 3 Enlarged plan of Chamber 1, showing locations of burials and caches, as well as construction features.

the Chamber 1 excavations consist of offerings and burials encountered within the fill, plus the single construction feature, Floor 1.

OFFERINGS

Only two apparent offerings were encountered in Chamber 1, neither in a position of any apparent significance such as at or near chamber centre, or on one of the main axes. The first, a group of 23 spire-ground and spire-lopped Olive shells (*Oliva reticularis* Lamarck) with single perforations in the body, lay at a depth of 10-17 cm. near the entrance area of the chamber (see Fig. 3 for location; descriptive data for these and other offering materials are presented in the discussion of artifacts, below). The beads appear to have been a necklace of eleven size-graded pairs, with the largest bead, which is perforated closer to the base than the others, probably having served as the centrepiece. There are no direct ceramic or other associations with the offering, but its depth suggests that it was buried near the end of the period of use of Quiroz. The second apparent offering lay at a slightly greater depth (24-31 cm.), and closer to the entrance and the north wall of the chamber (Fig. 3). Consisting of a pair of limestone bark beaters placed one above the other in such a way as to indicate that they were intentionally buried, the cache might be the result of an attempt at what was intended as temporary concealment rather than ceremonial activity, though the fact that the objects show no signs of use may support classification of the beaters as an offering. The similarity of the two beaters, as well as their association in the cache, may lend weight to the suggestion that bark beaters were used in pairs in the manufacture of paper. The difference in depth between this second cache and the group of *Oliva* beads is so slight that no meaningful statement can be made regarding relative dating of the two probable offerings.

BURIALS

Apart from the burial discovered by Anderson in Chamber 5, only five were recovered in Quiroz, all of them in Chamber 1, though fragments of human bone, presumably contemporaneous with the remainder of the archaeological material, were found in a crevice in Chamber 6. All of the burials in the Chamber 1 deposit (Burials 1, 2, 3 and 5) were in extremely poor condition, due in large part to the dampness of the soil, and none was accompanied by any artifacts. With the exception of Burial 4, which lay in the fill beneath Floor 1, all of the skeletal material was in extremely poor condition or unrecoverable, and no meaningful anthropometric data could be collected. Estimates of age and sex for all but Burial 4 are based entirely on *in situ* observations and are in most cases somewhat uncertain at best. Figure 3 shows the locations of all five interments in the chamber.

Burial 1: Depth from deposit surface to apparent resting surface *c*. 52 cm. Primary interment, probably fully extended dorsal, facing up. Head oriented to the north. At the edge of a small overhang in the east cave wall, and probably intentionally surrounded and covered with unshaped pieces of limestone. Infant, estimated age 6 months to 1 year. Fragments only.

Burial 2: Depth from surface 85 cm.; in brownish-black soil, but resting on sterile clay of cave floor. Primary interment, loosely flexed on the right side. Head oriented east-southeast, facing north-northeast. Burial area partly covered with rocks, probably an intentional cap for the grave. Child, estimated age 10 years, based on size plus unfused condition of epiphyses of humerus. Lower limbs almost entirely missing, and remainder represented by fragments except for left humerus; hence position is not certain.

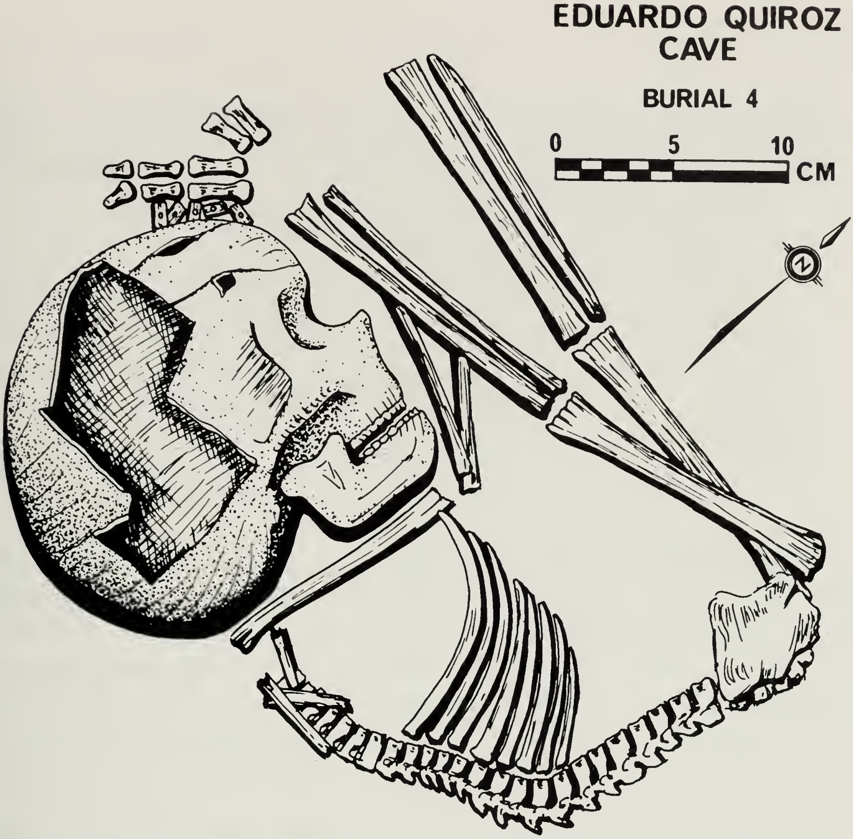
Burial 3: Depth from surface to lowest fragments 85 cm.; in brownish-black soil, partly resting on base clay. Probably primary interment, perhaps flexed on the right side. Head oriented to the west, probably facing east-southeast. Covered and surrounded by large rocks. Adult, no estimate of specific age possible; possible male, based on tooth size and thickness of calvarium fragments. Extremely poor condition, with only portions of the calvarium, teeth, and fragments of the postcranial skeleton remaining.

Burial 4: Depth to resting surface from top of Floor 1, 57 cm. Primary interment, tightly flexed on the left side, with the legs brought straight up in front of the face. Arms were bent at the elbows, with the hands lying in the area of the face. Head oriented to the west, the face turned to the north and slightly downward. No indications of a pit or grave in the sub-floor fill, and no surrounding or covering stones. Burial area 36 cm. east-west by 27 cm. north-south. Child, estimated age 3-5 years, based on the presence of erupted second molars with fully developed roots and no indication of root resorption, plus absence of any fusion of vertebral bodies with spinous processes, and the apparent cartilaginous condition of all epiphyses of long bones at time of death. Condition excellent, due probably to the protection afforded by Floor 1. Certainly associated with the floor construction, rather than intrusive. The sole accompanying artifacts were five rectangular beads made of thin sections of bird bone, drilled in the centres, which lay in the area of the hands (Fig. 4 and Plate 5).

Burial 5: Depth to resting surface 66 cm.; in black sterile clayey soil. Primary interment, tightly flexed dorsal with legs drawn up over chest and arms bent at right angles at elbows, lower arms and hands below knees. Head oriented to the southeast, probably facing up. No surrounding or covering stones. Adult, probably above 30 years; probably male, based on ruggedness of muscle attachments and gross size of bones, especially proximal ends of the femora. Cranium virtually destroyed, but remainder of skeleton present though badly smashed.

There is no clear-cut stratigraphic or other basis for relative temporal placement of the four burials in the chamber deposit, though the three which rest on sterile soil seem likely to be somewhat earlier than the infant burial (Burial 1) which lies higher up in the fill. Unfortunately, as the dampness of the earth plus the homogeneity of fill above and around the burials made recognition of burial pits impossible, we cannot determine

Fig. 4 Burial 4, a child three to five years of age, from the fill beneath Floor 1. Note the bone beads in the area of the hands.



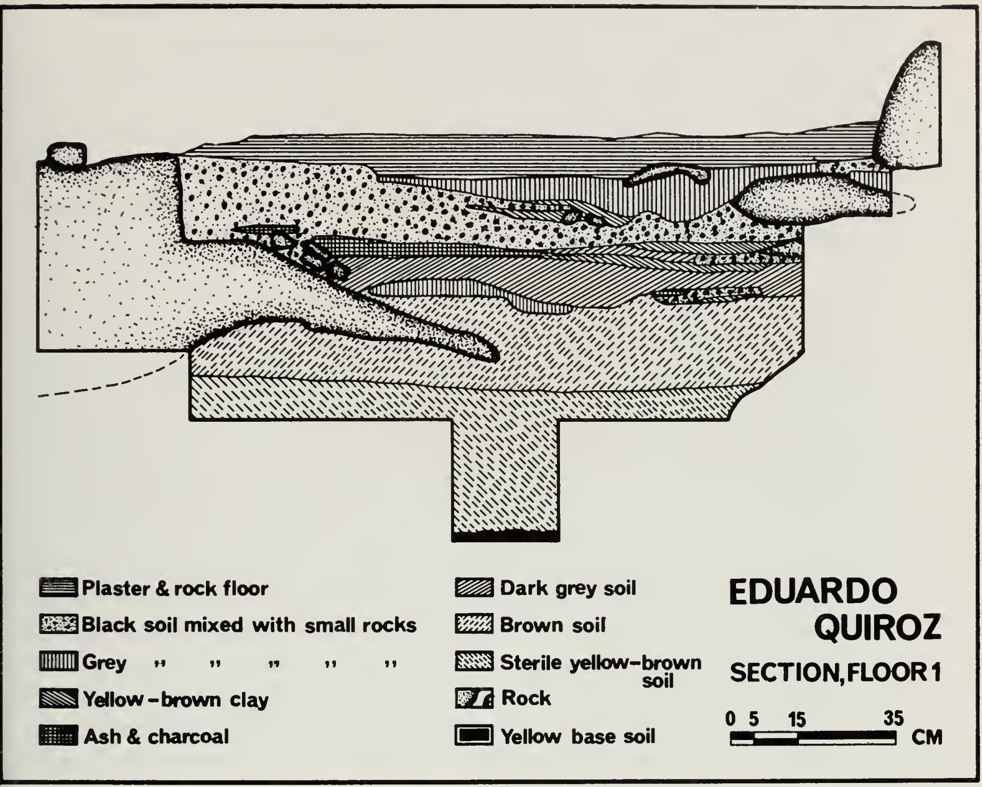
with certainty whether the differences in depth from surface are in fact a reflection of differing times of interment. Burial 4, on the other hand, appears likely to postdate deposition of at least a part of the midden, and hence could conceivably be later than burials 2, 3 and 5. The rather wide range of positions and orientations, with no two burials alike in the former feature and at least three variants of the latter, is surprising in so small a sample from what may have been a relatively short period of time, but it is no greater than that encountered in non-tomb populations in some surface sites. Data from surface sites indicate that, at least at our present level of knowledge, no temporal significance can be attached to specific burial orientations or positions, though there are certainly intersite differences in the latter feature. The absence of accompanying artifacts with all burials but 4 may indicate that the individuals were members of one of the lower strata of Maya society, though unaccompanied burials are not infrequently encountered in what seem to be honorific settings (as, for example, in subfloor fill of minor temples) in surface sites. The positions of the interments in the deposit do not suggest that the individuals were sacrificed, and it appears that at least four of the five are representatives of a population resident at or near the cave. The relationship between Burial 4 and Floor 1 is discussed below.

Floor 1

Removal of the 8 cm. of deposit overlying the plaster floor showed that only the central portion of the floor was in good condition, with both ends being largely eroded. A depression in the west corner may have been a small pit for storage or other use; sherds from the area were collected as a separate lot, though there was no distinction in the fill between the pit and surrounding deposit. The presence of an accumulation of midden atop the floor with a relatively high concentration of sherds indicates that the use of Chamber 1 continued for some time after the floor had fallen into disuse, and it may be that the deposition of much of the midden in Chamber 1 postdates abandonment of the floor, though contemporaneity of the two seems much more probable. Possible support for this suggestion consists of the presence of an alignment of unshaped or roughly squared stones bordering the floor on all but the entrance side, extending to a maximum of 42 cm. below the floor surface. If the rocks were set on the existing chamber floor surface at the time of construction of Floor 1, rather than dug into midden, then it follows that as much as 50 cm. of the midden may have been deposited after the floor was built. Refuse deposits extend below the level of the base of the bordering stones only in very limited areas of Chamber 1 in the corner farthest removed from Floor 1, and it is possible that the floor was built prior to any major accumulation of midden in areas other than this corner.

Clearing of the floor and bordering stones was followed by cutting of a trench through the construction, which showed the plaster of the floor to vary in thickness from 5 cm. at the southeast edge to 6.5 cm. at the southwest, with a maximum of 9 cm. near the floor centre. The quality of construction, involving both hardness of plaster and smoothness of floor surface, is well below that encountered in most Maya sites, including other Chiquibul caves. The floor lay atop a complexly stratified fill (Fig. 5) which, though parts of it appeared because of ash and charcoal content to be cultural debris, contained only 14 sherds, all fragments of storage jars, plus one shell disc. The paucity of artifactual material in the subfloor fill may support the suggestion that the floor was built at a time when little cultural debris had accumulated in Quiroz. The only other element in the fill was Burial 4, described above. The position of the burial just north and east of the floor centrepoint may be an indication that the child was sacrificed as part of construction activity, and in this connection the presence of two small holes in the right parietal and right side of the frontal bone may be significant, possibly indicating cause of death. Apparent constructional sacrifices are known from many other Maya sites, but the difficulty of distinguishing between sacrifice and honorific burial of a naturally-deceased individual is such that no identification of sacrifices can be made in the absence of clear signs of violent death. Apart from the burial, the trench through the floor provided no data on construction associations, or on the use to which Floor 1 might have been put.

Fig. 5 Section through Floor 1 and underlying fill, showing what are probably load-lines in the earth fill.



Alcove

Excavation was also carried out in a small alcove in the west wall of Chamber 1 immediately west of Floor 1, with results indicating that the alcove had served as a dump for the same sort of material as that in the main room, probably during the same time period. Only 40 cm. of deposit lay within the alcove, and the lower half of this bulk contained relatively little cultural material.

Rear area of the chamber

A single pit was sunk in the rear portion of Chamber 1, behind the stone wall, revealing a maximum of 40 cm. of deposit, with fairly high sherd content. No excavation was undertaken on the slope leading to Chamber 2, as surface collection in the area plus a very minor amount of probing of the soil resulted in recovery of all of the cultural material. Sherds from these areas, as well as from the entrance, were considered as part of the Chamber 1 collection.

CHAMBER 2

Though Chamber 2 appeared at the time of the first reconnaissance in 1961 to be promising because of its seemingly dry deposit, test pits in the central and western parts of the area produced no cultural remains. In the western section of the chamber, sherds were present in a 3 cm. thick layer of brownish to greyish powdery soil which sat directly atop sterile soil; elsewhere, no powdery layer was present, and sherds were largely limited to the stacked masses previously mentioned, placed in niches and crevices around the periphery of the room. With the exception of the sherds and a single possible offering consisting of a small, complete celt and an irregular subglobular bead found on the surface close to the south wall near the passageway leading to Chamber 3, the archaeological remains in Chamber 2 consisted of the abovementioned group of vessels on the ledge above the main chamber.

CHAMBER 3

A pit in the centre of the small floor area of Chamber 3 sectioned an average of 15 cm. of dark soil, banded with ash and charcoal and containing a small number of sherds, overlying yellow clay and rock. At the 15 cm. depth, a mass of fragments of *Spondylus* shell was encountered, accompanied by one complete and three fragmentary subglobular beads of nephrite, albite, and crystalline limestone, as well as six or more *Spondylus* disc beads and two fragmentary tabular beads of the same material. The objects were associated with a small amount of greyish material, possibly ash, in a depression in the stone floor of the chamber, and most appear to have been intentionally crushed, making full reconstruction impossible. However, the lot, which is assumed to have been an offering, clearly included a carved *Spondylus* object, perhaps a pendant or pectoral, with either a large perforation or possibly a scalloped edge, as well as the variety of beads. Not far from the cache, but almost certainly not associated with it, lay sherds of an elaborately-painted polychrome bowl (Fig. 6k).

Excavation in Chamber 3 yielded more constructional data than artifacts. The pit in the chamber proper was eventually extended over almost all the level area, revealing that the stone of the original floor slopes sharply upward from the centre to the edges, with parts of the resulting depression having been filled with clay and stone by the Maya, while the higher areas along the northern side of the chamber were smoothed off level with the remainder. A trench was cut into the slope against the southwest wall of the chamber below the rubble wall and the passageway between chambers 2 and 3, in the hope of producing some evidence bearing on the time of construction of the passage, but the black clay and stone of the slope yielded very few sherds. The trench did reveal, however, extensive filling along the southwest wall of the chamber, apparently undertaken during the building of the passageway; fill of loose rubble was used to close crevices, and was capped by the clay and stone of the slope. The entire slope appeared to be artificial construction, seemingly intended to make even more difficult the entry into Chamber 3. Removal of high spots in the stone floor of the chamber was also in evidence along the southwest wall beneath and around the slope. Subsequent investigation of the fill around the passageway itself produced no diagnostic sherds or other material of temporal significance.

CHAMBER 4

In reality no more than a small pocket leading east and downward from the northeast end of Chamber 3, Chamber 4 contained no midden deposit but was marked by groups of sherds similar to those encountered in Chamber 2, stacked in a number of crevices along the southern wall. There were, in addition, several sherds of storage jars scattered over the chamber floor, some of them encrusted with, or imbedded in, the flowstone and stalagmites which covered the entire area. As in Chamber 2, the presence of jar sherds intentionally placed in out-of-the-way parts of the chamber is suggestive of ceremonial activity rather than the usual form of garbage disposal. Other than the ceramic material, only a single fragmentary shell pendant was recovered from Chamber 4.

CHAMBER 5

The area of Anderson's excavations was chosen as the site of a test pit in Chamber 5, but the results were rather disappointing, as absolutely no cultural material was recovered. The floor of 5, in those areas where it is not covered by massive rockfall, is composed of yellow clay mixed with rock, and the base stone of the chamber appears to rise close to the present floor surface in many areas. Where possible, we removed rockfall to permit examination of the underlying material, but nowhere did we encounter signs of occupation or use of the chamber other than scattered fragments of charcoal on the ground surface. We can only surmise that Anderson chanced to discover the lone burial in the chamber, interred in a spot probably chosen because of its proximity to the passage leading to Chamber 6. Near the western end of Chamber 5 there was a large bed of ashy material with a maximum thickness of 5 cm., from which a fragmentary whistle (Fig. 17w) and a number of sherds were recovered; otherwise, the surface collection appears to have accounted for all cultural material in the chamber.

CHAMBER 6

Like Chamber 5, 6 could not be excavated in most areas due to the masses of stone which overlay the floor. Where it was possible to examine small areas of the floor, we could not see any midden or other cultural deposit. Accordingly, effort was centred on collection of vessels in niches around the edges of the chamber, the main group of which lay on a ledge and in a small alcove near the entrance to the chamber, about 12.5 metres above the chamber floor (Plate 6). In the alcove, beneath the vessels, lay a tiny shell bead detected by one of the keener-eyed Mayas; excavation showed this to be part of a group of 1,104 spire-lopped *Olivella* beads which together with 10 *Oliva* beads, 8 small beads made from the shells of two species of gastropod, approximately 35 small circlets of mussel shell and 9 perforated mussel-shell objects of various forms, plus 2 pyriform plano-convex hematite objects and a single cylinder of the same material, make up what was almost certainly an offering placed in the alcove before the vessels were set in position. Despite the diversity of forms and materials in the cache, it is possible that all the objects were parts of a single unit, perhaps a necklace with an inlaid centrepiece. The smaller beads appeared to have been washed from their original positions, presumably by drip water from the alcove ceiling, so that no guess can be made as to possible stringing pattern. The offering was apparently placed atop a twill-plaited mat, of which we recovered an impression of a portion in the clay of the alcove floor (Plate 10); the striated surfaces of the individual elements in the impression suggest that the material of the mat was rush or reed. A thorough search of other alcoves and niches, coupled with test excavation where it appeared necessary, revealed no other caches or archaeological material in Chamber 6 beyond sherds, mostly of unslipped jars. As in other chambers, charcoal fragments were noted in many parts of this innermost chamber of Quiroz.

Ceramics

Although the ceramic collection from Quiroz is essentially a single entity in the sense of having come from one small, if multichambered, living/use area, the sample is separable into four units which differ from one another in context or method of collection. These consist of (i) the materials collected by Anderson, probably from the surfaces of all chambers, from niches, and from the small excavation in Chamber 5; (ii) the surface collection made in 1963; (iii) the excavated material from Chamber 3; and (iv) the material from the Chamber 1 deposit, which is approximately 73% of the total sample. The first three units clearly can have no temporal significance except insofar as it is possible to ascribe age to specific vessels or sherds on stylistic grounds, but it was assumed during excavation and initial sorting of the Chamber 1 sample that some chronologically meaningful patterns might be discernible in the artificial strata. Attempts at reconstruction of vessels represented by considerable numbers of sherds reduced hopes of detecting a sequence in the Chamber 1 sample, for we found that sherds of one vessel might be scattered not only horizontally but also vertically, with the latter involving in two cases all levels from the surface to 40 cm., the effective base of the deposit in most areas of the chamber. This degree of mixture seemed to substantiate indications of extensive disturbance of the deposit noted in the initial excavation report (Pendergast, 1964, p. 124), but nevertheless the entire Chamber 1 sample was plotted stratigraphically, and percentage representations of a number of vessel shapes and decorative motifs were determined for each of the nine strata in the deposit. Results of part of this analysis are included in sections on comparative material and dating which accompany descriptive categories, and also figure in the general discussion of ceramics which follows the descriptions. The descriptive categories include all material from the cave, with provenance and frequency given for separate locations; except for those categories involving some potentially significant stratigraphic data, the Chamber 1 sample is considered as a single unit.

Perhaps as a result of the nature of the principal use of the cave, the ceramic sample from Quiroz is heavily weighted on the side of unslipped wares, of which the great bulk consists of olla (jar) sherds. Eighty-two per cent of the sample of 23,720 sherds is composed of unslipped wares, of which only 3% are forms other than jars. This pattern is repeated in that portion of the total sample which was recovered from Chamber 1, in which unslipped wares, more than 99% of which are jars, constitute 84.3% (14,655 sherds) of the collection. The remaining 15.7% (2,571 sherds) is primarily slipped monochromes; polychrome sherds, in no case more than 1.8% of the total sample for any given stratum, constitute only 0.9% (150 sherds) of the Chamber 1 sample, or 5.5% of the slipped ware. Because the preponderance of unslipped jars makes any category of slipped ware only a tiny portion of the whole, frequency figures which appear in the general ceramic discussion were based solely on the slipped ware total sherd count. Vessels reconstructed from a number of sherds are counted as one and assigned to the stratum where sherds were concentrated, while sherds possibly from one vessel but not joinable are counted separately. Even the most number-oriented ceramicist could hardly maintain a pretense of culture-historical significance for the frequency percentages in the face of the mixture and imbalance which mark the Chamber 1 sample, but there are nonetheless some interesting, if rather shakily-based, inferences to be drawn from the materials, the kind of tantalizing suggestions which lead one to hope that a good, unmixed stratified deposit may someday be encountered in one of the Chiquibul caves.

In matters of description, I have followed the form used in the Actun Balam and Rio Frio E reports (Pendergast, 1969 and 1970) wherever possible. Like the materials of these reports, the Quiroz ceramics do not lend themselves to the establishment of new types or varieties such as those recognized by Willey *et al.* (1965, pp. 319-390) in the Belize Valley, and in the absence of full description of their series I am loath to risk increasing an already staggering list by renaming types or varieties already classified, perhaps thereby obscuring cultural relationships. It is reasonably clear now that there are ceramics unique to the Chiquibul, or at least primarily distinctive of the area, but data beyond those now available, including stratigraphic information from surface sites in the area, will be needed before any sensible classification can be developed.

While the Actun Balam ceramics were compared almost exclusively to those from Uaxactun, the comparisons for Quiroz have been extended over a somewhat wider area culturally, if not geographically, to include sites of the lower-lying parts of the Cayo District and occasionally of other portions of British Honduras (Belize). Both the Uaxactun report (Smith, 1955) and that for the Belize Valley (Willey *et al.*, 1965) provide extensive comparative data for ceramic materials, and can be consulted if broader distributional information is desired for pottery from Quiroz. Though the Quiroz material has not been fitted into the type-variety system, the type and variety designations for Uaxactun and Belize Valley materials are included where comparisons with these sites are made.

Most of the shape and size categories employed in description of the Quiroz ceramics are those of Smith (1955, p. 4), with some modifications. Diameters are generally an average where some irregularity occurs, unless the shape or condition of the vessel has dictated otherwise. For vessels with a rim diameter less than the maximum for the body, both figures are given; in addition, an orifice diameter may be given separately for jars with restricted orifice and outcurving or flaring rim. Wall thickness is usually an average of measurements at the rim, except in the few categories with marked variations in thickness from rim to base, with the following categories: eggshell, 0.1-0.25 cm.; thin, 0.25-0.5 cm.; medium-thick, 0.5-0.8 cm.; thick, 0.8-2.0 cm.; very thick, above 2.0 cm. Height of vessel is the full maximum height including annular base, feet, or appendages unless otherwise indicated, but determination of shape categories for vessels with unrestricted or slightly restricted orifice is based on the ratio of diameter to body height alone, not including base or feet. Vessel shapes include *bowls*, with unrestricted or slightly restricted orifice and height equal to but not less than one-third of diameter; *dishes*, with similar orifice and height between one-third and one-fifth of diameter; *plates*, similar in orifice but with height less than one-fifth of diameter; *vases*, either cylindrical or with slightly restricted orifice, and with height markedly greater than diameter; and *jars*, with restricted orifice, either with or without neck, generally globular or subglobular in body outline, and with variable height-diameter ratios. An additional distinction is recognizable between bowls and jars: bowls, unless entirely unslipped, are slipped on the interior, whatever the exterior treatment, while jars, whether slipped on the exterior or not, are unslipped on the interior. This difference presumably reflects different uses for vessels in the two categories, and perhaps a Maya preference for a slipped surface in a food container, while a jar functioned better without slip if used for water storage, and no less well if used to house other materials. The distinction is of principal value in sherd sorting, for overlap in shape between whole vessels in the two categories does not occur.

An additional shape category has been used in description of the Quiroz pottery: vessels of the same orifice characteristics and height-diameter ratios as bowls but of much greater size, often three to five times the diameter of bowls, are classified as *basins*. Thompson (1942, fig. 10) uses the term *basin* in describing vessel lids, but does not recognize basins as a category separate from bowls; otherwise the category seems not to have been used in formal pottery descriptions for the central Maya area. The large size of the vessels suggests specialized use, but an equally sound basis for creation of a separate category lies in the avoidance of lumping together two sharply distinct height and diameter measurement ranges. To this and the other shape categories are added two which reflect function rather more than form: *candeleros*, which are miniature cup-like unslipped objects, usually with perforations in the sides, possibly designed for use as incense burners, and *incensarios* (*censers*), generally large cylindrical unslipped vessels with complex decoration, apparently with the same function as the candeleros.

As the entire collection could not be transported to the Royal Ontario Museum following preliminary sorting, it was impossible to undertake paste and temper analysis of all sherds. The material examined was primarily that selected for illustration, with the addition of a number of small sherds, mostly polychrome, retained for possible comparison or other study. Temper identification was made with the aid of a 10x lens, supported by mineralogical examination and chemical testing of a selected sample. Grade scales were not employed in describing paste texture, due in large part to the difficulty of relating scale determinations to variations in sherd thickness, and also to the small number of cases in which texture appears to be a critical characteristic. Some judgement of texture can be derived from notations of fracture characteristics. Temper grain size description follows the terminology of the Rio Frio E report (Pendergast, 1970); *minute* grains are those invisible to the naked eye, while *very small* grains are barely visible to the naked eye, *small* are readily visible with diameters approaching the equivalent of one-half of sherd thickness, and *large* have diameters greater than the equivalent of one-half of sherd thickness, often extending from surface to surface and occasionally protruding from the surface. Grains in the last three categories will obviously vary in size, as their classification is dependant upon sherd thickness; however, as the relationship between temper grain size and vessel wall thickness is a distinctive feature of some shapes and wares such categories seem preferable to those which are purely metric.

The colour nomenclature employed in the descriptions is that of Ridgway (1912), chosen in preference to the Munsell system for reasons set forth in the Actun Balam report (Pendergast, 1969, p. 13). For all categories requiring it, the range of colours is given, generally in descending order of frequency but without specific frequency figures. For most specimens discoloured by overfiring or post-fire burning no specific colours are given, but in all cases in which it is possible, a judgement as to the general colour intended by the potter is provided. Preliminary examination of data on stratigraphic relationships among monochrome slipped wares disclosed no meaningful patterns, and hence these data have not been included in the descriptions, but Table 1, which follows the descriptive section, presents vertical distribution data for stamped and undecorated bowls and jars. As in the Actun Balam and Rio Frio E reports, the pottery illustrations are uniformly one-quarter actual size.

SLIPPED WARE (4280)

I. Slipped polychrome (215)

Bowl, round-side, incurving rim (rim 8, body 13)

Illustration: Fig. 6a-f

Form: Rounded, thin sides, increasing to medium-thick in the rim area of one vessel. Lip rounded to slightly pointed, base slightly to markedly flattened.

Size: Diameter (2 specimens only): rim 13.1-15.1, maximum 14.6-16.7; height (2 specimens) 8.0 (estimated)-11.6 cm.; thickness 0.4-0.5 cm., 0.65 cm. at the rim of one specimen.

Surface: Interior slipped, with high burnish and rare firing discolouration; exterior slipped except for base, with high burnish.

Paste: Hard to very hard, with angular fracture. Colour includes uniform buff-orange and black core with orange surfaces.

Temper: Calcite, generally very small grains, but occasionally minute and rarely small. Very small to small angular opaque fragments occur in a few sherds.

Colour: Red and black on orange, red and black on cream. Slip: Light Ochraceous Buff, Cinnamon Buff, Zinc Orange. Decoration: red (Hay's Russet, Mahogany Red, Vinaceous-Rufous, Kaiser Brown [overfired?]) and black.

Decoration: Interior, black rim band and one or more red bands below, lower body undecorated; exterior, black rim band, one or more encircling bands in red and/or black, bordering encircling panel of glyphs or naturalistic motifs including coati (?) with associated pseudo-glyphs, lower body with horizontal or vertical red bands or horizontal red bands combined with vertical red and black panels, the latter divided by thin vertical black lines. Also, black rim band, body covered with red split ovals and dots.

Provenance: 0-60 cm., Chamber 1; Chamber 3 (includes specimen from Government Collection, Fig 6f).

Comparative material: The shape and decorative motifs from Quiroz are not present at Actun Balam and are unreported from other sites in the Chiquibul with the exception of Tzimin Kax (Thompson, 1931, figs. 11e and 14a), where they are of Holmul v (initial Late Classic) date. Vessels of similar shape and decoration to those from Quiroz are known to have been recovered from Cubeta Cave by A. H. Anderson, but no data are available on the specimens. One sherd (Fig. 6b), which may be from a barrel-shaped rather than a round-sided bowl,

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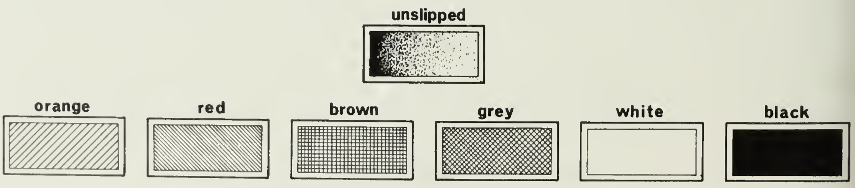
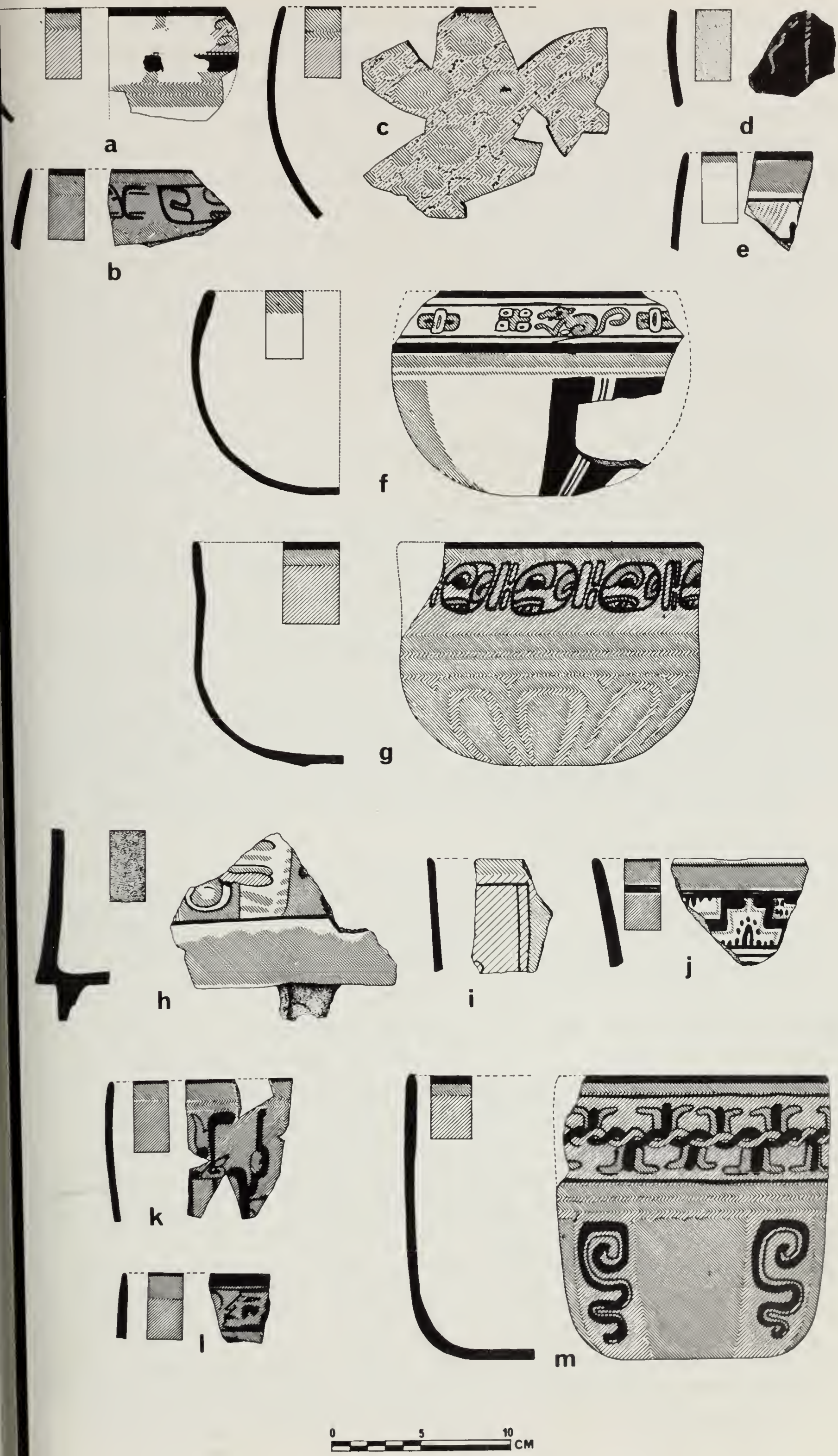
Fig. 6	Polychrome bowls.
a-f:	Round-side bowls with incurving rim. *C* is red, black and orange on buff, *d* is negative-painted black with slight traces of red over orange slip, *e* and *f* are red and black on cream. *f* is from the Government Collection.
g:	Round-side bowl with outcurving rim, probably non-functional glyph band. Government Collection.
h-j:	Tripod bowls with flaring to outcurving sides. *j* is red and black on cream.
k-m:	Deep vertical-side bowls. The motif on *k* appears to be a human hand holding a staff, and that on the upper body of *m* is a variant of the "twist-bud" design. *m* is from the Government Collection.

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resembles generally some of the barrel-shaped bowls from Xunantunich (Benque Viejo), which date from B.V. IIIb or mid Late Classic times (Thompson, 1942, fig. 36). These may fall into the Benque Viejo Polychrome type of Willey *et al.* (1965, fig. 235a, b), which is of Spanish Lookout ceramic complex affiliation (A.D. 700-1000). The shape of the single complete vessel (Fig. 6f) suggests a Tepeu 1 date, as may the vertical panelling on the lower body, which resembles that on a Saxche Orange-polychrome specimen from Uaxactun (Smith, 1955, fig. 32b9, and Smith and Gifford, 1966, p. 139). In the absence of more specific parallels, the Uaxactun resemblances may be the best basis for placement of the Quiroz materials in the early part of the Late Classic.

Bowl, round-side, outcurving rim (1)
Illustration: Fig. 6g
Form: Rounded, thin sides, curving outward in the upper body; lip slightly pointed, base concave.
Size: Diameter 17.2 cm., height 12.7 cm., thickness 0.5 cm.
Surface: Interior slipped, high burnish; exterior slipped with moderately high to high burnish.
Paste, temper: n.d. (= no data available)
Colour: Red and black on orange. Slip: Ochraceous Orange. Decoration: red (Hay's Russet) and black.
Decoration: Interior, black rim band, red band below, body plain; exterior, black rim band, red band below bordering encircling panel of probably non-functional glyphs (same glyph repeated), with two red encircling bands at mid-body and large loops rising from the base, enclosing red oval elements.
Provenance: Government Collection.
Comparative material: Though the shape has no direct parallels in the polychrome wares of the Chiquibul or surrounding areas, similarities between this vessel and the round-side incurving-rim bowls from Quiroz suggest a Tepeu 1 date.

Bowl, tripod, flaring to outcurving side (rim 1, body 7)
Illustration: Fig. 6h-j
Form: Flaring to outcurving, thin to medium-thick sides. Lip rounded to slightly pointed, base flat to slightly concave.
Size: Diameter, n.d.; height, n.d.; thickness 0.4-0.75 cm.
Surface: Interior slipped with moderate to high burnish, or unslipped (1 specimen only); exterior slipped except for base, with moderate to high burnish, occasionally eroded.
Paste: Moderately hard to hard with partly to wholly angular fracture. Colours range from uniform orange and buff-orange to black core with orange surfaces.
Temper: Calcite, minute to very small grains; very little visible in most specimens even under 10x magnification. Minor admixture of quartz in 1 specimen.

Colour: Red and orange on buff-white (5), red, black, and orange on cream (1), brown (perhaps red) on buff (1). Overfiring prevents determination of specific colours.

Decoration: Interior plain, or with black rim band and red and black bands below, lower body undecorated, or (1 fragment only) rim and upper body banded, possible animal figure (insect?) in centre; exterior has red rim band only, or red and black lines in upper body, lower body decorated with vertical lines and bands, curvilinear motifs, lateral ribbing combined with black (and red?) geometric designs, or stepped frets enclosing red frets with black dots and oval lines at the base, attached to upper of two encircling black lines.

Appendages: Feet are present in three specimens only, and include hollow tubular with circular (?) vent on outer surface, hollow slab containing clay pellet, and solid slab.

Provenance: 0-10 cm. (6), 30-40 cm. (1), Chamber 1; surface, Chamber 2-3 passage (1).

Comparative material: The specimen with fret decoration is almost certainly not of Chiquibul manufacture, and its close resemblance in surface characteristics and decorative motifs to specimens from Rio Frio E (Pendergast, 1970, fig. 5f,g) points to a Rio Frio-Belize Valley origin, and probably a middle Late Classic (Tepeu 2) date. The specimen with curvilinear decoration resembles quite closely one from Actun Balam (Pendergast, 1969, fig. 5d) in shape, decoration, and paste characteristics. On the basis of shape, a date in the latter part of the Early Classic (Tzakol 2-3) is very likely for this and the other slab-footed specimen. Remaining sherds are too fragmentary to permit intersite comparisons.

Bowl, deep, vertical-side (rim 3, body 2)

Illustration: Fig. 6k-m, 7a

Form: Vertical to slightly incurving thin to medium-thick sides, high relative to vessel diameters. Lip rounded to pointed, base flat to slightly concave.

Size: Diameter (2 specimens only) 15.1-15.2 cm.; height (2 specimens) 15.5-16.0 cm.; thickness 0.4-0.6 cm.

Surface: Interior slipped, moderate to very high burnish, partly eroded in most specimens; exterior slipped, moderate to very high burnish, base either slipped or unslipped.

Paste: Hard, with moderately angular fracture, brick red to greyish-buff. No differentiation between core and surface colours in any specimen.

Temper: Calcite, minute to very small grains, with minor admixture of opaque angular fragments in one specimen and very small hematite nodules in another.

Colour: Red and black on orange. *Slip*: Cinnamon (1), Salmon Buff (1), Ochraceous Orange (1). Decoration: Hay's Russet (1), Vinaceous-Rufous (2), and black. Two specimens discoloured by overfiring; no specific colour determinations possible.

Decoration: Interior, black rim band, red band below, remainder plain; exterior, black rim band, one or more encircling red bands bordering encircling panel of motifs ranging from variant of "twist-bud" to human faces (glyphs?), with lower body decoration unknown in the latter case, and in the former consisting of an encircling black line and two red bands bordering red vertical panels separating black "corkscrew" spirals; also bands bordering decoration of entire lower body as single panel, embodying human figures holding staffs (?); also four encircling panels separated by black-bordered red bands, top panel with stylized bird heads (?) interspersed with groups of vertical black lines, second panel with large irregular ovals in red separated by groups of three red dots, third with black triangles joined in pairs at apexes forming angular "hourglass" patterns, separated by groups of vertical black lines, and in alternating horizontal and vertical pairs, with black spirals at intervals in the pattern, with fourth panel similar to the second.

Provenance: One vessel (Fig. 7a) from Chamber 1, distributed from 0 to 40 cm.; one sherd from 0-5 cm., Chamber 3; one vessel (Fig. 6m) from Government Collection.

Comparative material: Vessels of this shape and decoration do not occur at Actun Balam, but the shape is known at Rio Frio (Mason, 1928, figs. 6,7, and 8b), though with sharply different decoration. Both the shape and the decoration of the Quiroz specimens find no parallels in the Belize Valley, but elsewhere in the country, both at Lubaantun (Joyce, 1929, plate XLIII) and at Altun Ha, the "twist-bud" motif occurs, in the latter case clearly dating from Tepeu 1. The vessel shape, but with different decoration, is also present at Lubaantun (Joyce, 1929, plate XLI, fig. 2b). A Tepeu 1 date is indicated for the shape at Uaxactun (Smith, 1955, fig. 33b19), where variants of the "twist-bud" motif span the Tepeu 1-2 period, while the "corkscrew" spiral is known from Tzakol 3 through Tepeu 2 (Smith, 1955, pp. 66 and 69). The vessel with four encircling design panels embodies elements suggestive of Uaxactun affinities, but without direct parallels at this site or elsewhere in the region. A Tepeu 1 date is most probable for the Quiroz specimens, though an extension through Tepeu 2 cannot be ruled out.

Bowl, basal flange (rim 4, body 18)

Illustration: Fig. 7b,c

Form: Rounded, medium-thick sides, curving out sharply at the rim in one specimen. A flange, angled downward, occurs on the lower body, at

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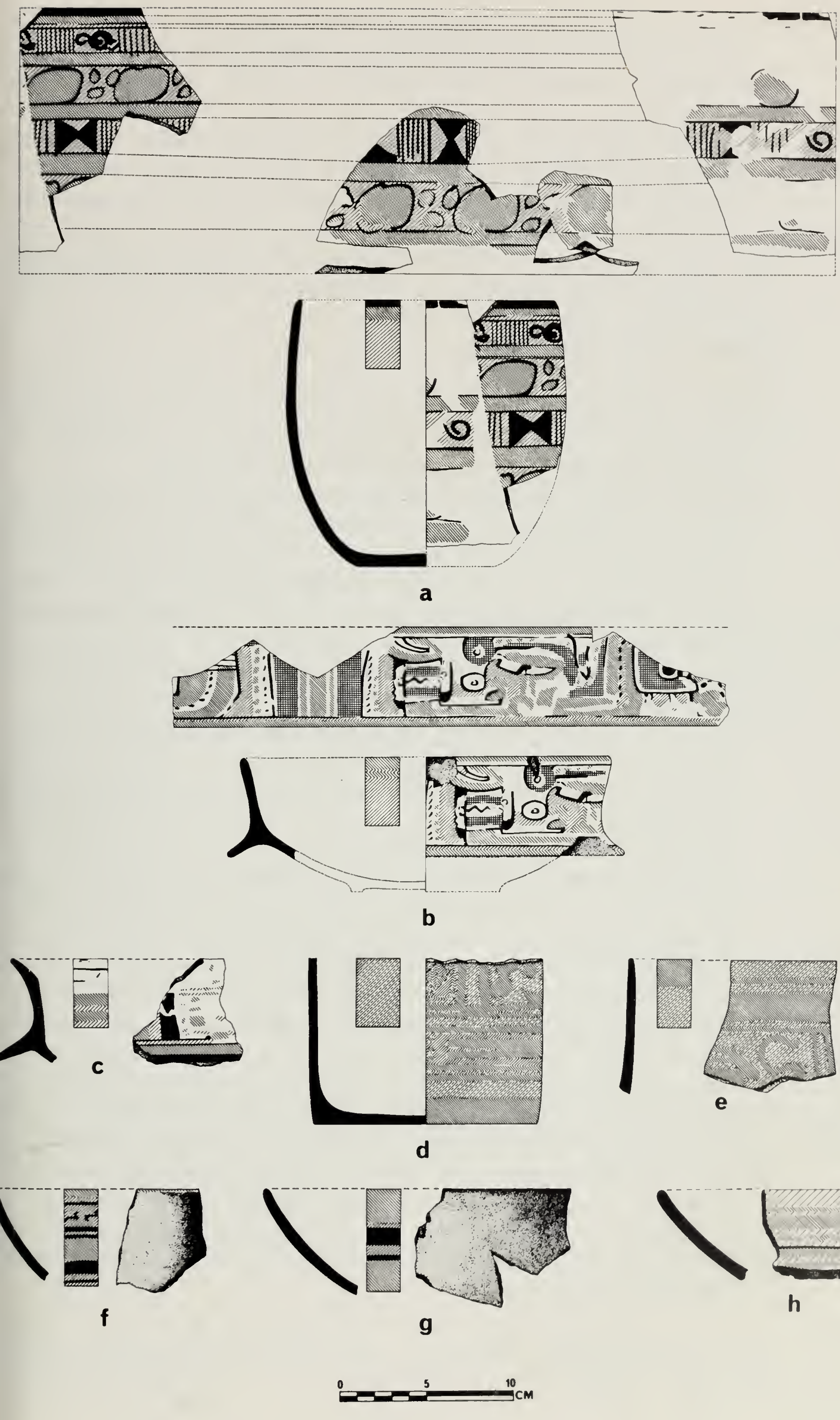
Fig. 7 Polychrome bowls, vase, and dishes.
a: Deep bowl with slightly rounded sides.
b,c: Basal-flange bowls. *b* is red, black, yellow and brown on orange, and is probably related to Actuncan Orange-polychrome.
d,e: Cylindrical vase (two fragments of one vessel), red and orange on buff-white.
f-h: Round-side dishes, all with unslipped exterior.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about the point at which sharp inward curvature to the base begins. Lip rounded to slightly pointed, base probably annular.

Size: Diameter (1 specimen only) 21.5 cm.; height *c.* 7.9 cm.; thickness 0.55-0.7 cm.

Surface: Interior slipped, high to very high burnish, eroded in most specimens; exterior slipped to lip of flange, high to very high burnish, frequently eroded or flaked. Body below flange, and base, unslipped. Discolouration due to overfiring is common.

Paste: Moderately hard to hard, with somewhat crumbly to largely angular fracture. Colours include brownish-orange throughout and black core with orange surfaces.

Temper: Calcite, very small grains.

Colour: Red and black on orange; red, black, yellow and brown on orange. Slip: Zinc Orange (2) Decoration: Bay (1) and black; Mahogany Red, black, Capucine Yellow and Brownish Olive (1). Remainder too eroded or overfired to allow specific colour determinations.

Decoration: Interior, red bands or black lines at and just below rim, lower body either undecorated or with additional red bands; exterior, red rim band, complex semi-naturalistic (?) encircling panel including human face(s) and other elements separated by groups of vertical red and brown bands bordered by black lines and dots, with black lower border line and red band at flange rim.

Provenance: 0-40 cm., Chamber 1; reconstructable specimen is from 0-10 and 0-20 cm. levels.

Comparative material: A single basal flange bowl is reported from Rio Frio E, but it differs in almost all respects from the Quiroz specimens. Though the profile of the single partly reconstructable specimen differs from illustrated specimens in the Belize Valley, its affinities with Actuncan Orange-polychrome, variety unspecified, may be indicated by the appearance of dots in band borders, though the naturalistic motifs resemble more closely Dos Arroyos Orange-polychrome. Both of these types are part of the Hermitage ceramic complex, dating from A.D. 100-600, with Actuncan Orange-polychrome falling in the Tzakol 1 (A.D. 300-400) period, and Dos Arroyos apparently later (Willey *et al.*, 1965, pp. 350-359, figs. 211 and 215). Though original reporting of the Quiroz work identified the specimen as Actuncan Orange-polychrome (Pendergast, 1964, p. 124), I am inclined now to go no farther than a suggestion of affinities between the Quiroz specimen and the named type. General affinities can also be recognized between the Quiroz specimens and those of Early Classic date at Uaxactun and elsewhere, though the sharply flaring rim of one Quiroz sherd (Fig. 7c) appears not to occur at any site included in the comparative survey. An Early Classic date, probably Tzakol 1-2, is likely for all the Quiroz specimens.

Vase, cylindrical (rim 7, body 23)

Illustration: Fig. 7d,e

Form: Vertical, thin sides, occasionally slightly outcurving near rim. Lip slightly pointed, base flat to very slightly concave.

Size: Diameter (1 specimen only) 13.1 cm.; height, n.d.; thickness 0.45-0.5 cm.

Surface: Interior unslipped or occasionally slipped, with slight to moderate burnish; exterior slipped with moderate to high burnish, except base, which is uniformly unslipped. Firing discolouration is common.

Paste: Hard, with angular fracture; buff-grey throughout.

Temper: Calcite, minute to very small grains.

Colour: Red and black on orange (11), red and orange on white (18), red and black on grey (discoloured ?) (1). Slip: Zinc Orange, white, and Pale Smoke Gray. Decoration: Hazel, unspecified red, unspecified orange, and black.

Decoration: Interior, red rim band or plain, with lower body uniformly undecorated; exterior, rim plain or with one or more red encircling bands, bordering panels of curvilinear motifs separated by vertical lines, with encircling lines below enclosing bifurcated rectangles, all in red.

Provenance: Red and black on white, 0-40 cm. in Chamber 1; red and black on grey from surface, Chamber 1; red and black on orange from Chamber 1 surface and surface of Chamber 6 (1 sherd only).

Comparative material: The fragmentary nature of most of the specimens prevents specific comparisons, and the colour and decoration of the single larger fragment do not find any direct parallels in the area included in the comparative survey. The shape suggests a date in the early to middle part of the Late Classic.

Dish, round-side (rim 3, body 0)

Illustration: Fig. 7f-h

Form: Rounded, medium-thick sides; lip rounded, base form unknown.

Size: Diameter, n.d.; height, n.d.; thickness 0.55-0.7 cm.

Surface: Interior slipped, moderate to high burnish, discoloured due to overfiring; exterior unslipped.

Paste: Moderately hard, with partly angular fracture; uniform brick red-orange or black core with orange surfaces.

Temper: Calcite, very small grains; one specimen has minor admixture of quartz.

Colour: Red and black on orange, specific colours not determinable.

Decoration: Interior, red rim band or plain rim, red and black bands and lines on body, all or nearly all horizontal; or black lines horizontally below rim, enclosing simple scroll (?) motifs, with black lines and bands below. Exterior plain.

Provenance: 0-10 cm., Chamber 1.

Comparative material: Specimens are too fragmentary to permit intersite comparisons.

Plate, round-side (rim 43, body 79)

Illustration: Fig. 8a-e

Form: Rounded, medium-thick sides; lip rounded to pointed, annular base. One small specimen (Fig. 8b), which differs in most respects from the remainder of the sample, has a projecting rim.

Size: Diameter 27.0-43.2 cm. (does not include small specimen); height 5.9-6.4 cm.; thickness 0.55-0.8 cm.

Surface: Interior slipped, with moderate to high burnish, and frequent discolouration from overfiring; exterior unslipped, or slipped on upper body only, with slight to moderate burnish.

Paste: Moderately hard to hard, with somewhat crumbly to largely angular fracture; uniformly grey or brick orange, or with grey core and orange surfaces.

Temper: Calcite, minute grains to very small in a few sherds, occasionally with minor quartz admixture.

Colour: Red and black on orange (121), specific colours not determinable due to overfiring and occasional erosion; black, red, and orange on cream (1).

Decoration: Interior, black rim with one or more red or black bands, enclosing naturalistic(?) design at centre; red band with black lines below, enclosing rounded black frets; two red bands above a black band bordering central area, in which a mythical animal appears; black rim with black lines below enclosing crude black terrace-and-rectangle motifs with inverted red terraces at the upper edge of the panel, black line below bordering central area with mythical animal; black and red bands and lines enclosing panel of black and red heavy S motifs. Small specimen has red and black ticks at rim over orange ground, with crude angled lines below, bordered at bottom by red band, below which are two black lines; orange colour continues beyond these lines to centre area, which is cream coloured. No indications of centre decoration. Exteriors of all specimens plain, or rarely with red rim band and single red band below.

Provenance: 0-50 cm., Chamber 1; fill of artificial slope, Chamber 3 (3 sherds).

Comparative material: Round-side annular-based plates with simple profile are not reported from sites in the Chiquibul except at Tzimin Kax (Thompson, 1931, p. 298, fig. 11k); in most cases, plates from the area are modified by the addition of a lateral ridge. Round-side plates are reported from Rio Frio E (Pendergast, 1970, fig. 7a,b), and appear to be more characteristic of the Rio Frio-Belize Valley area than of the Chiquibul, occurring in the Tiger Run ceramic complex of A.D. 600-700 (Saturday Creek Polychrome) at Barton Ramie (Willey *et al.*, 1965, figs. 221e,f,h, 229, and 230) and at the same or a slightly later time level at Xunantunich (Thompson, 1942, fig. 34). The decorative motifs of one Quiroz specimen are parallelled by a vessel from

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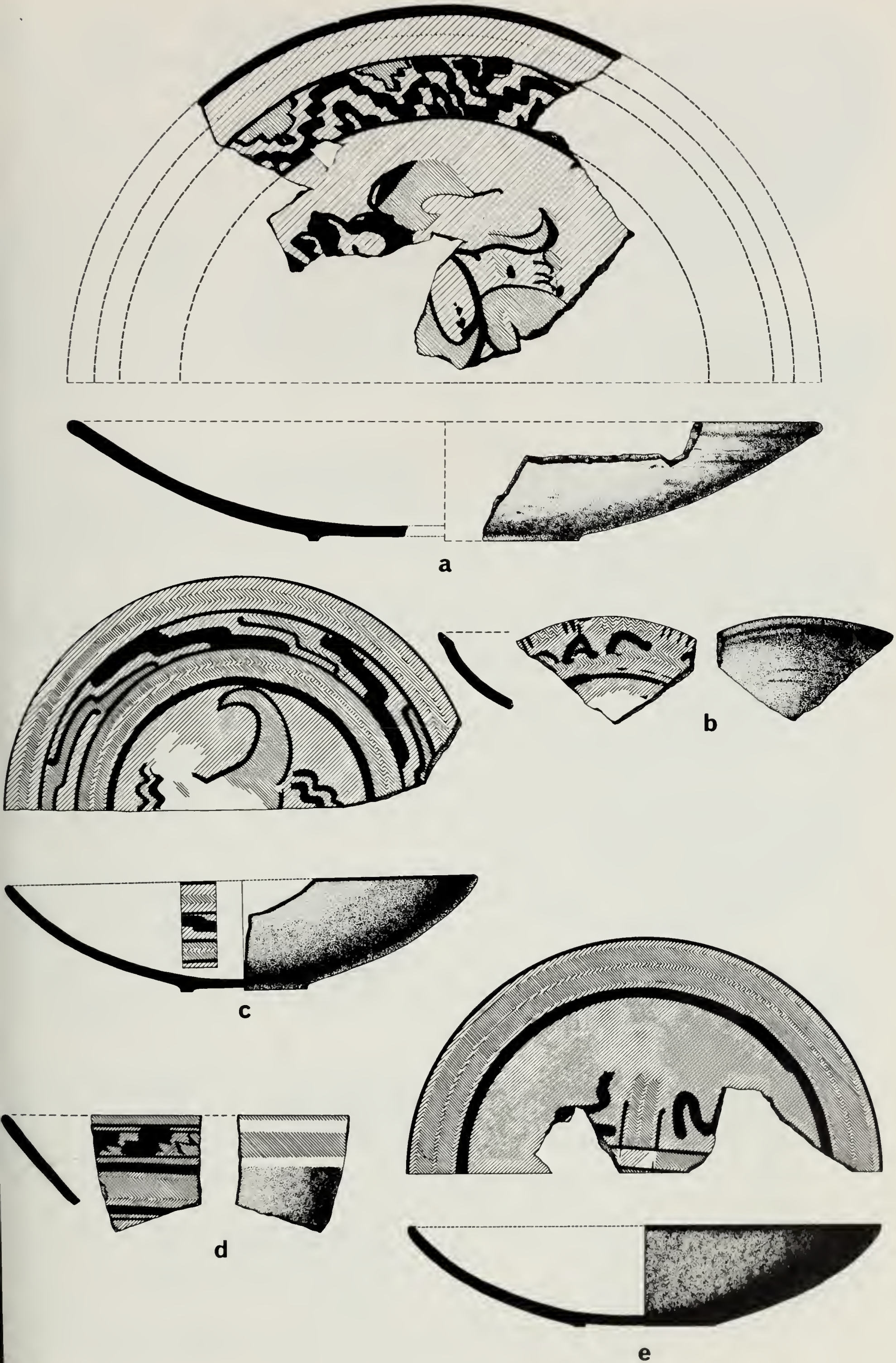
Fig. 8 Polychrome plates.
a-e: Round-side annular-based plates, all except *b* probably with mythical animal centre design. Exterior of *d* is red on cream in upper portion.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Xunantunich (Thompson, 1942, fig. 34a), but do not resemble closely those from Barton Ramie and Rio Frio E. Similarities between Quiroz and Uaxactun plates are in most cases too general to be meaningful, but the terrace-and-rectangle motif of one Quiroz specimen may be related to occurrences at Uaxactun in Tepeu 2 times, though it differs markedly in execution from Uaxactun examples (Smith, 1955, p. 68). Many of the decorative motifs of Quiroz plates appear to be distinctive of the Chiquibul, and at the present level of knowledge of the area the absence of round-side plates from other reported sites cannot be taken as solid evidence for a link between the Quiroz specimens and those from the Belize Valley or elsewhere. The vessel shape indicates placement in the terminal Early Classic (Tzakol 3) or initial part of the Late Classic (Tepeu 1), and layout of designs points to the latter date as more likely.

Plate, round-side, lateral ridge (rim 0, body 3)

Illustration: none

Form: Rounded, medium-thick sides, with a ridge encircling the body at about mid-height. Lip form unknown; annular base in one specimen, others unknown.

Size: Diameter, n.d.; height, n.d.; thickness 0.6-0.75 cm.

Surface: Interior slipped with moderate to high burnish; exterior slipped to lateral ridge only. Firing clouds apparently common.

Paste, temper: n.d.

Colour: Red and black on orange; no specific colours determinable.

Decoration: Interior, red and black lines and bands below rim, probably enclosing mythical animal centre motif. Exterior undecorated, or with encircling red and black lines on upper body.

Provenance: 0-30 cm., Chamber 1.

Comparative material: The fragments are too small to permit specific comparisons, but lateral-ridge plates occur at Actun Balam (Pendergast, 1969, fig. 5b) and at Tzimin Kax (Thompson, 1931, fig. 12), the latter in a Holmul v (early Late Classic) context. Occurrences at a similar time level in other sites in the comparative area suggest a Tepeu 1 date for the Quiroz sherds.

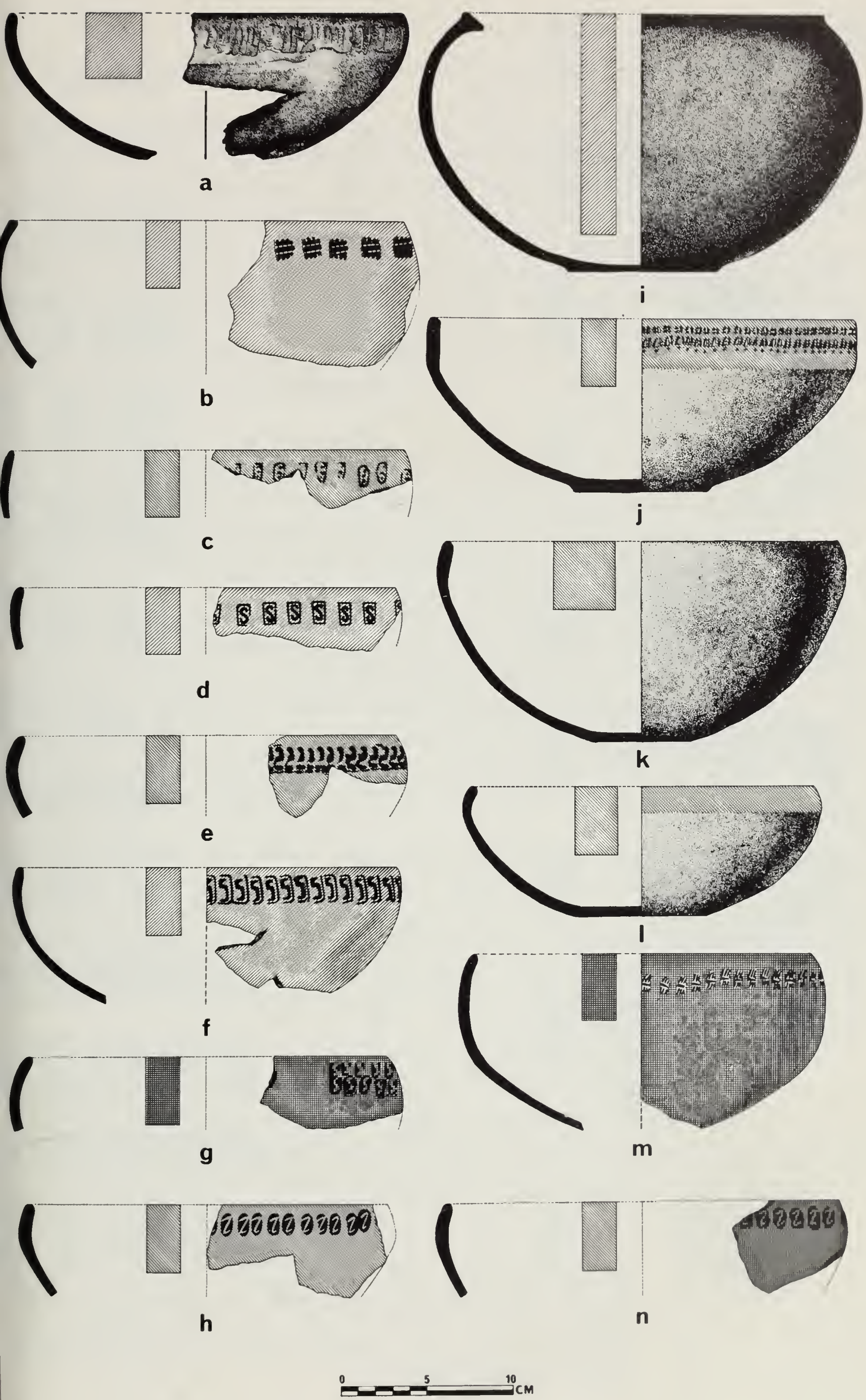
II. Slipped bichrome (3)

Three sherds which have only two colours, but might be from polychrome vessels. One is a plate rim sherd, Vinaceous-tawny interior and exterior slip, with a black exterior rim band; the second is a body sherd of a cylindrical vase, red decoration on white slip; and the third is a body sherd of a round-side bowl, with vertical red stripes on cream slip. The sherds are from the 25-30 cm., 40-50 cm., and 0-10 cm. levels of the Chamber 1 deposit, respectively.

Fig. 9 Monochrome bowls.

a-h, j,m,n: Round-side bowls with incurving rim, unit-stamp exterior decoration. *a,j* and *m* represent less common motifs than the S and reverse S, Z and other motifs depicted.

i,k,l: Round-side bowls with incurving rim, undecorated. The rim form of *i* is uncommon in this shape category.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III. Slipped monochrome (4062)

Bowl, round-side, incurving or thickened rim (rim 437, body 976)

Illustration: Figs. 9, 10, 11 a-k

Form: Rounded, medium-thick sides, curving inward slightly to markedly in the upper body and rim area to produce slightly restricted orifice. Rim is occasionally thickened in forms ranging from simple increase of wall thickness to bolstering or addition of sharp inner and outer small projections. Lip rounded to pointed, flat, or concave, and often in the latter two cases sloped inward relative to the plane of the vessel wall at the rim. Base rounded, flattened, or annular, and very rarely flattened with slightly concave area at centre.

Size: Diameter at rim 19.9-29.0 cm., maximum 20.9-40.6 cm.; height (6 specimens only) 7.7-15.2 cm.; thickness 0.5-0.8 cm., excluding rim thickening.

Surface: Interior slipped, with slight to moderate burnish, firing clouds and mineral(?) stains common; exterior slipped with slight to moderately high burnish, or unslipped. Smoothing is often careless or incomplete on exteriors, rarely on interiors, and exterior slip is occasionally not carried to the base. Annular-based specimens have uniformly unslipped bases, while in others slip usually extends onto at least parts of the base. A few specimens are marked by extensive pitting of both surfaces, apparently the result of burning-out of temper, and many are partly eroded, especially on the lower portion of the interior surface.

Paste: Soft to moderately hard, with crumbly to slightly or (rarely) moderately angular fracture. Colours are generally uniform from surface to surface, and include orange, brick-red, buff-orange, buff, and black; grey and black-cored sherds with orange surfaces are uncommon.

Temper: Calcite, generally in very small grains but occasionally with minute grains predominating; small grains are rare. Minor admixtures of quartz, limestone, and unidentified opaque angular fragments occur in most sherds examined, all in minute to very small grain sizes. Hematite nodules also were noted in a small number of sherds. Temper quantity is very high in most specimens, with large amounts visible on sherd surfaces in many cases.

Colour: orange (Ferruginous, Vinaceous-Tawny, Cinnamon-Rufous, Cinnamon, Mikado Brown), red (Hay's Russet, Vinaceous-Rufous, Russet), brown (Mars Brown, Chestnut Brown, Fuscous, Kaiser Brown, Carob Brown, Hazel, Mummy Brown, Tawny Olive), and black.

Decoration: Interior, none; exterior, unit stamps in single or multiple encircling bands below rim, or tool marks, either single or in groups, in

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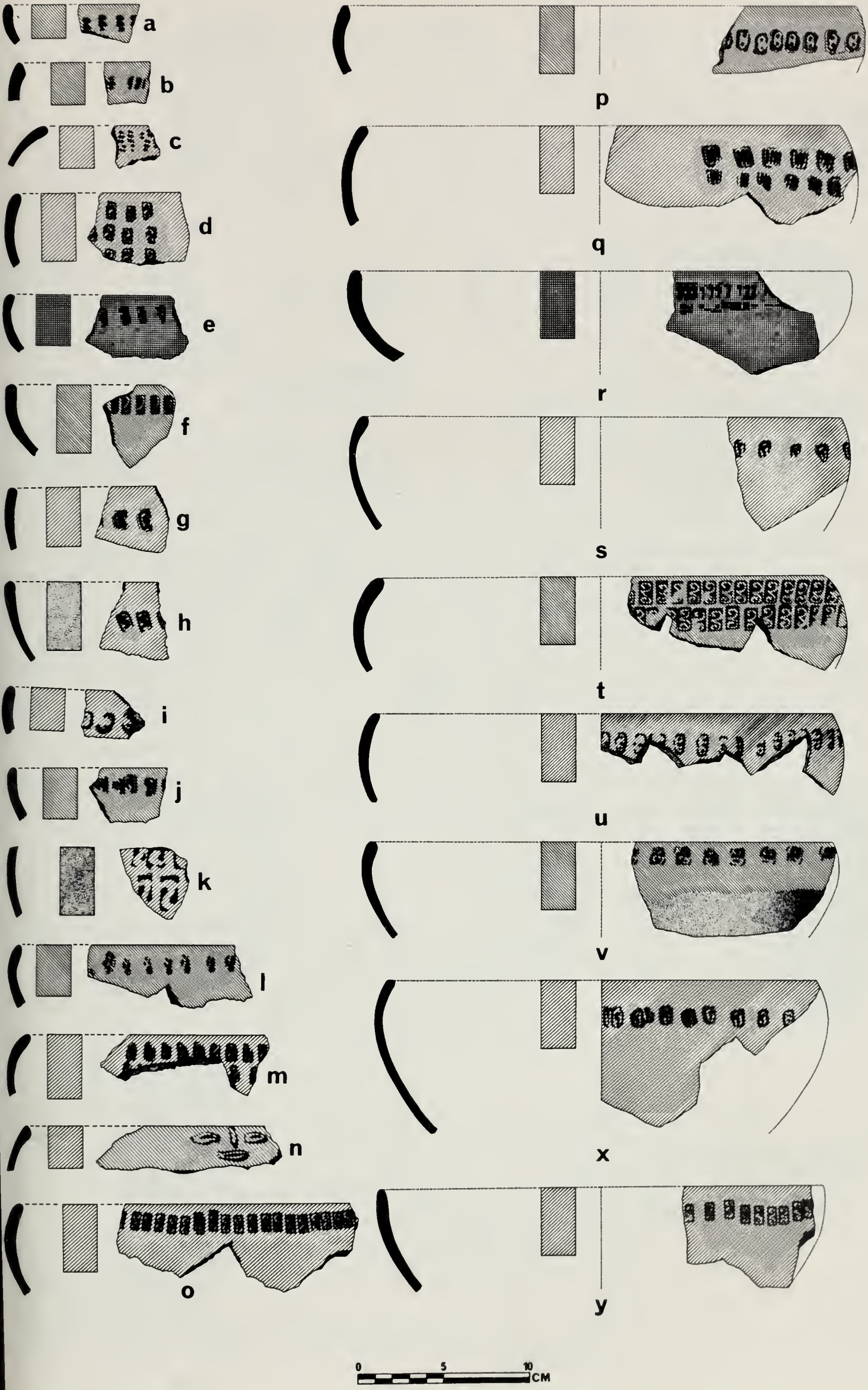
Fig. 10 Monochrome bowls.

a-m, o-y: Round-side bowls with incurving rim, unit-stamp exterior decoration. *c* and *l* may be tool-marked, rather than stamped.

n: Round-side bowl with incurving rim, modelled-and-applique human face decoration.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similar bands (74); postslip-prepolish groove-incised encircling line below rim, bordering panel of hachured blocks separated by blocks containing rectangular (?) element (1); modelled human face at rim (1); also plain (1303).

Provenance: Stamped and tool-marked vessels, 0-30 cm. in Chamber 1 (see general discussion, below), and surfaces of all areas of the cave including the ledge in Chamber 2; incised specimen, 0-10 cm., Chamber 1; human face, surface of Chamber 2; undecorated specimens, 0-80 cm. in Chamber 1 and surfaces of all areas of the cave, including niche with vessel group in Chamber 6.

Comparative material: Stamped bowls were recovered at Actun Balam, as were undecorated bowls of similar shape (Pendergast, 1969, pp. 21 and 24, fig. 8). This form of decoration is known on vessels of other shapes from Lubaantun (Joyce, 1926, plate XXVI, 2), from the Mountain Cow area of the Chiquibul and from Poptun, Guatemala (Kidder, 1954, p. 12, fig. 7), and appears to be a marker of the Chiquibul and immediately surrounding areas. Stratigraphic position of the Quiroz stamped specimens may indicate a late date, as does the shape of all the specimens. Among the various sites yielding incurved-rim bowls, Xunantunich has produced several which are comparable in shape to those from Quiroz, dating from Benque Viejo III and IV (Thompson, 1942, fig. 26). A Tepeu 2-3 date is most likely for the group as a whole, with the stamped specimens falling most probably in Tepeu 3. The single specimen with human face decoration resembles those from Actun Balam (Pendergast, 1969, p. 24, fig. 5e-j), assigned to Tepeu 3 on the basis of similarities with San Julio Modelled and Carro Modelled vessels of this date from Uaxactun (Smith, 1955, figs. 49b6 and 50a24, and Smith and Gifford, 1966, pp. 144-145).

Bowl, round-side, outcurving rim (1)

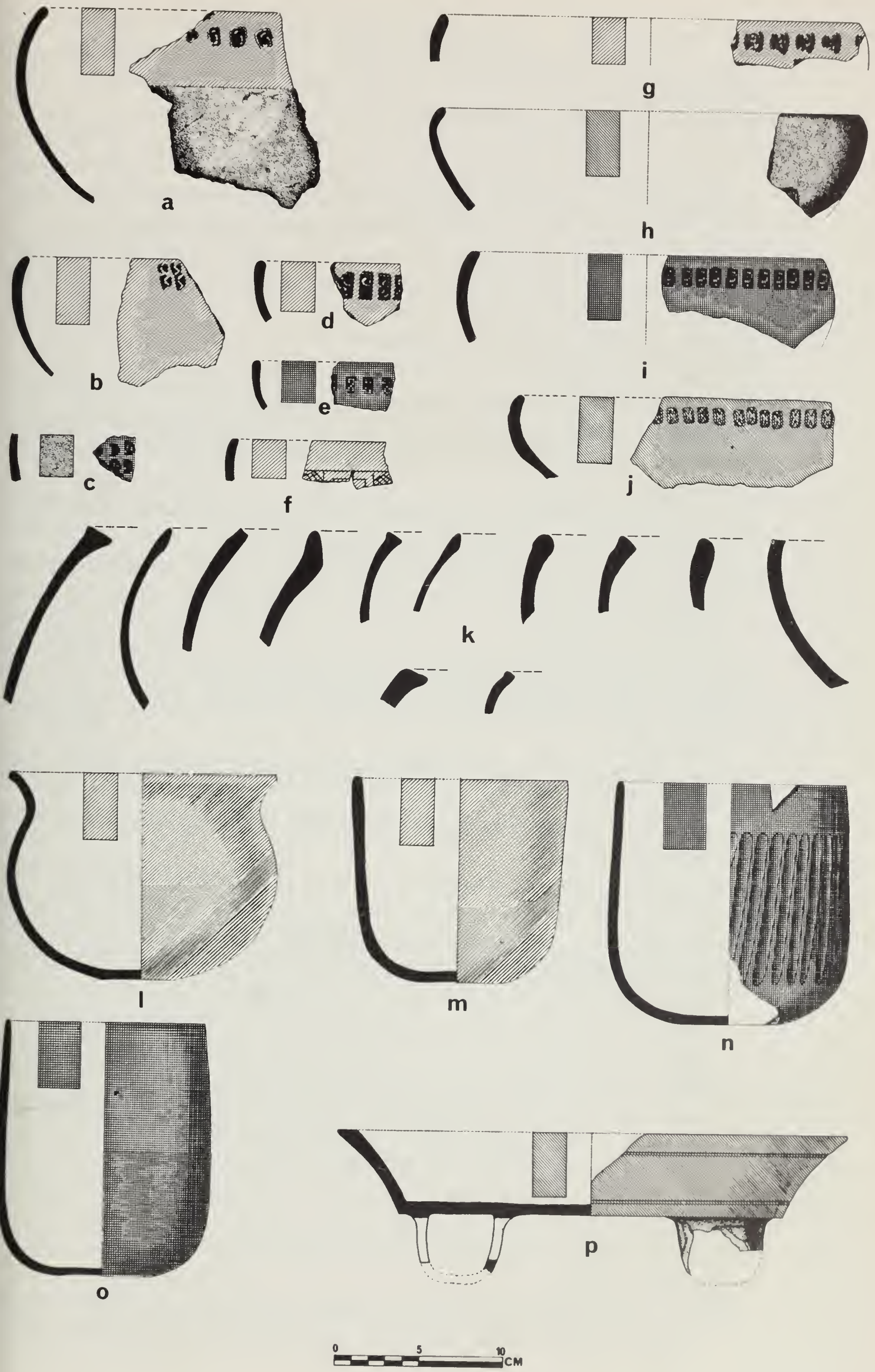
Illustration: Fig. 11 l

Form: Rounded, thin sides, curving inward in upper body and then outward in rim area. Lip flattened, base slightly concave.

Size: Diameter 16.1 cm.; height 12.4 cm.; thickness 0.5 cm.

Surface: Interior slipped with moderate burnish; exterior slipped with moderate to high burnish, base unslipped.

Fig. 11	Monochrome bowls and dishes.
a-e, g,i,j:	Round-side bowls with incurving rim, unit-stamp exterior decoration.
f:	Round-side bowl, incised encircling band on exterior.
h,k:	Round-side bowls, undecorated.
l:	Round-side bowl with outcurving rim. Government Collection.
m-o:	Deep vertical-side bowls. *m* and *n* are from Government Collection.
p:	Outcurving-side tripod dish, preslip groove-incised encircling lines and groove-incised decoration on unslipped feet. Government Collection.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Paste, temper: n.d.
Colour: orange (Pecan Brown)
Decoration: none
Provenance: Government Collection.
Comparative material: No reported specimens from the area of the comparative survey resemble closely the Quiroz specimen. A redware vessel from Rio Frio E is of generally similar shape, but with higher neck and narrower orifice than the Quiroz vessel, and the same is true of Tepeu 2 and 3 specimens from Uaxactun (Smith, 1955, Fig. 47). A Late Classic date is probable for the Quiroz bowl.

Bowl, deep, vertical side (rim 3, body 5)
Illustration: Fig. 11m-o
Form: Thin to medium-thick sides curving upward slightly from base, then rising vertically or almost vertically to produce vessels deep in comparison with their diameters. Lip rounded to slightly pointed; base flat to slightly concave.
Size: Diameter 12.0-13.8 cm.; height 12.2-14.5 cm.; thickness 0.5-0.7 cm. (all measurements from three specimens only).
Surface: Interior slipped with very slight to moderate burnish; exterior slipped with moderate to moderately high burnish except for base, which is unslipped.
Paste: Soft, with slightly angular fracture; grey inner portion, orange exterior. (Observations possible on one specimen only.)
Temper: Calcite, minute to very small grains in high quantity. (One specimen only.)
Colour: Brown (Fuscous, Chaetura Drab), orange (Mikado Brown), and black.
Decoration: Plain (7), or fluted with fluting extending to a point below the rim (1).
Provenance: 0-10 cm., Chamber 1 (Fig. 11o); surface, Chamber 3 (5, probably all from one vessel); Government Collection (Fig. 11 m,n).
Comparative material: A somewhat shallower redware fluted vessel is reported from Tzimin Kax (Thompson, 1931, fig. 15b), and an undecorated specimen closer in shape to the Quiroz Chamber 1 vessel is known from the same site (Thompson, 1931, fig. 13a). Both are of Holmul v (Tepeu 1-2) date. Vessels of this shape are unreported elsewhere in the survey area, but fluted barrel-shape bowls are known from Rio Frio E (Pendergast, 1970, fig. 10n) and Baking Pot, where vessel is of the Spanish Lookout phase, dated at A.D. 700-1000 (Bullard and Bullard, 1965, p. 24 and plate XI). A Tepeu 1 or 2 date seems probable for the Quiroz vessels.

Bowl, basal angle, outcurving upper side (rim 1, body 2)
Illustration: none
Form: Lower sides outcurving from base to angle, from which sides curve outward again to rim. Thickness ranges from medium-thick to thick.

Lip rounded, base probably annular in all cases.

Size: Diameter, n.d.; height, n.d.; thickness 0.7-0.85 cm.

Surface: Interior, slipped with moderate burnish, firing clouds present; exterior slipped with moderate burnish, firing clouds present; base unslipped.

Paste, temper: n.d.

Colour: all specimens darkened by postfire(?) burning, preventing colour determination, but probably originally red.

Decoration: none

Provenance: surface, Chamber 1.

Comparative material: No similar vessels reported from the Chiquibul. Profiles of the Quiroz sherds resemble generally those of Z-angle dishes such as the redware specimens from Baking Pot (Bullard and Bullard, 1965, fig. 10e,f), but the lower portion of the body is much more curved, and the relative heights of the two segments of the sides are different, with the Quiroz specimens having nearly equal upper and lower body heights.

Remarks: Vessels are classified as bowls because, though no sherd is complete enough to permit reconstruction of diameter or height, the fragments suggest small diameter relative to overall height.

Bowl or dish, basal flange (1)

Illustration: none

Form: Rounded, medium-thick sides, with flange angled downward from a point below mid-body height. Lip form unknown; base probaby annular.

Size: Diameter, n.d.; height, n.d.; thickness 0.65 cm.

Surface: Interior slipped with moderately high burnish; exterior slipped to edge of flange only, with moderately high burnish.

Paste, temper: n.d.

Colour: Grey (Mouse Gray)

Decoration: none

Provenance: 10-20 cm., Chamber 1.

Comparative material: May resemble Tzakol basal flange vessels from Uaxactun (Smith, 1955, fig. 18), but sherd is too small to permit specific comparisons.

Bowl body, general (535)

Sherds from round-side vessels with interior slip, but lacking characteristics necessary for specific classification.

Dish, tripod, outcurving or flaring side (rim 89, body 114)

Illustration: Fig. 11p, 12a-i

Form: Outcurving to flaring medium-thick to thick sides, occasionally with sharp projection at rim. Lip round to flat, rarely pointed; base flat to occasionally convex.

Size: Diameter 18.5-30.6 cm.; height 6.85-9.3 cm., or 4.3-6.2 cm. without feet; thickness 0.6-0.95 cm.

Surface: Interior slipped with moderate to moderately high burnish; exterior slipped except for base and feet, with moderately high burnish. Firing clouds apparently rare, but erosion of interior base slip is common.

Paste: (1 specimen only) moderately hard, with partly angular fracture; uniform orange throughout.

Temper: (1 specimen only) calcite, very small to small grains; little visible on vessel surfaces.

Colour: Orange (Ferruginous, Cinnamon, Mikado Brown, Cinnamon-Rufous, Vinaceous-Tawny, Sayal Brown, Mars Orange, Kaiser Brown), red (Hay's Russet, Bay, Vinaceous-Rufous), brown (Fuscous), and black.

Decoration: Interior, plain. Exterior, plain; single encircling band of unit stamps; shallow encircling channel on lower body; two preslip groove-incised encircling lines at rim and base; postslip-prepolish groove-incised encircling lines at rim and base(?) enclosing panels of loops or horizontal triangles with attached lines and sunburst element at tip; also postfire plain-incised crude encircling lines at rim and base enclosing three groups of four vertical lines, two pairs in each group, evenly spaced around vessel, combined with postslip-prepolish (?) notches in very slight Z-angle at base (one specimen only).

Appendages: Foot forms include solid nubbin with slightly expanded lower portion and flat bottom; hollow with rounded, flattened, or pointed bottom and either vertical slit vent in outer surface or rough triangular vent in inner surface; and large hollow with slightly flattened bottom, two lateral lines extending approximately half-way around upper portion of each foot, probably above vent.

Provenance: 0-60 cm. in Chamber 1 (notched specimen from 10-20 cm. level; see general discussion); also from 0-5 cm. level, Chamber 2.

Comparative material: A common form at Actun Balam, where the unnotched forms are dated as Tepeu 2-3 on the basis of comparisons with specimens from Uaxactun (Pendergast, 1969, p. 28, fig. 7a-f,h, j,l-o; Smith, 1955, fig. 51). Hollow-footed outcurving-side dishes are also known from Tzimin Kax in Holmul v times (Thompson, 1931, fig. 13g), and from Barton Ramie in Platon Punctate-Incised: Platon Variety, a type in the Spanish Lookout ceramic complex (Willey *et al.*, 1965, figs. 240 and 241). A similar date applies to vessels of this shape from Xunantunich, where basal notching appears to be more common than elsewhere (Thompson, 1942, fig. 47). The basal-notched

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Fig. 12 Monochrome dishes, plate, basins and vase.

a-i: Outcurving-side tripod dishes, plain and with stamped and incised decoration. *a*, *e* and *h* are from Government Collection.

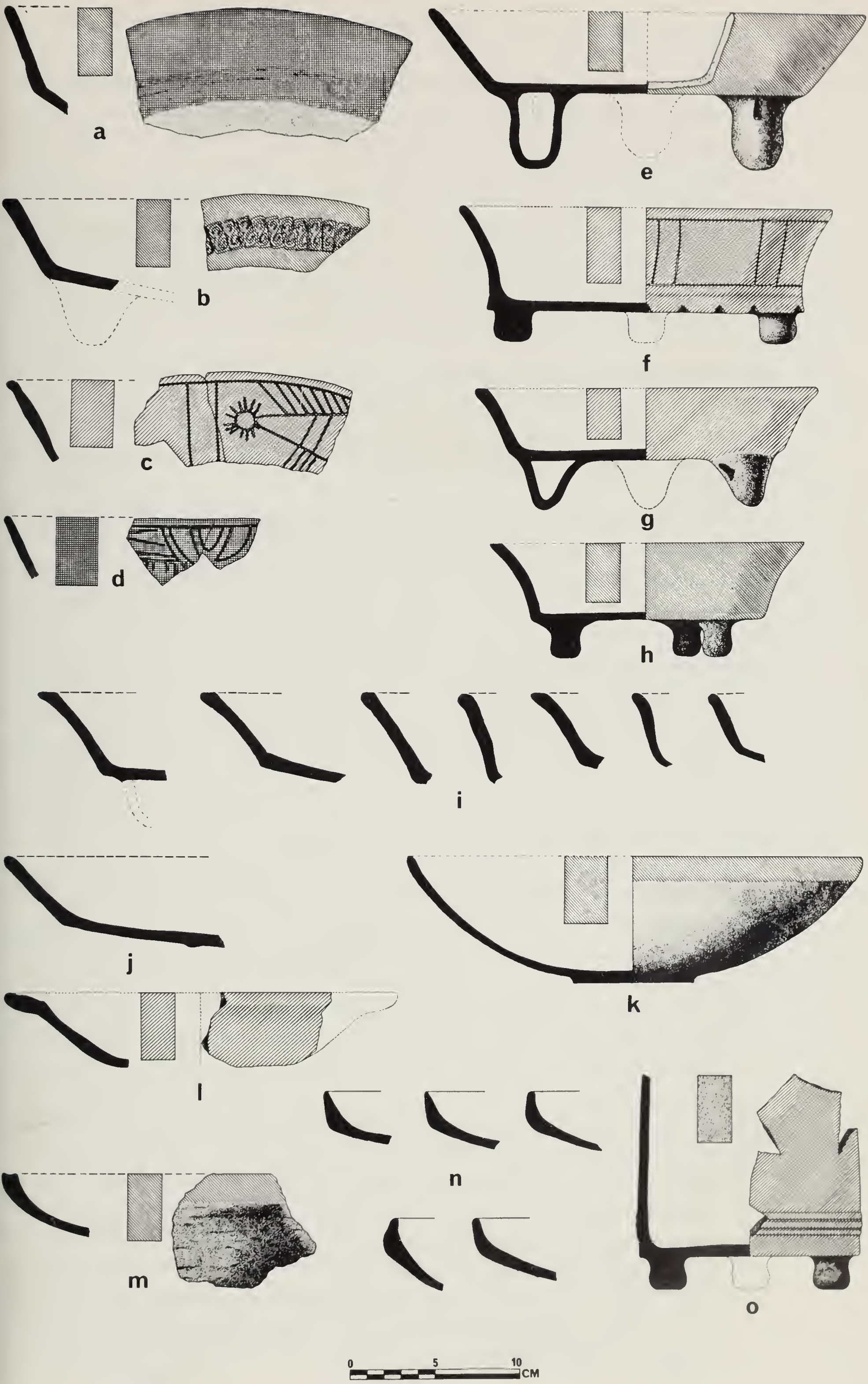
j: Outcurving-side dish with annular base, undecorated.

k: Round-side dish with annular base, undecorated. Government Collection.

l: Round-side plate with outcurving grooved rim.

m,n: Basins or platters, shallow, with upturned rim.

o: Cylindrical vase, raised ribs near base.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specimen from Quiroz differs from the Xunantunich vessels in having solid nubbin feet, and is also of somewhat different profile; the same is true of specimens of Tepeu 3 date from Actun Balam (Pendergast, 1969, p. 29, fig. 7g,k) and a Cameron Incised plate from Uaxactun (Smith, 1955, fig. 51dl, and Smith and Gifford, 1966, p. 145). The Quiroz specimen is closer in profile to a Tepeu 2 Rosa Punctuated vessel from Uaxactun, except that this also has hollow feet (Smith, 1955, fig. 51al, and Smith and Gifford, 1966, p. 145). Either a Tepeu 2 or a Tepeu 3 date is possible for the Quiroz vessel, with some arguments in favour of the earlier placement. The category as a whole very probably spans both Tepeu 2 and Tepeu 3.

Dish, flaring side, annular base (rim 4, body 2)
Illustration: Fig. 12j
Form: Flaring, medium-thick sides; lip rounded; very low annular base.
Size: Diameter, n.d.; height 5.3 cm.; thickness 0.7 cm. (one specimen only).
Surface: Interior slipped with moderately high burnish; exterior slipped on sides with moderate burnish, base unslipped.
Paste, temper: n.d.
Colour: Red (specific colour not determinable)
Decoration: none
Provenance: surface and ledge, Chamber 2.
Comparative material: No vessels with a similarly flat bottom and flaring sides are reported from the area of the comparative survey; may be related to the outcurving or flaring-side tripod vessels, and a similar date is possible.

Dish, round-side, annular base (rim 100, body 2)
Illustration: Fig. 12k
Form: Rounded, medium-thick sides; lip rounded to slightly pointed, low annular base.
Size: (one specimen only) Diameter 26.8 cm.; height 7.5 cm.; thickness 0.55 cm.
Surface: Interior slipped, with moderately high burnish; exterior slipped in rim area only, with lower body and base unslipped, or occasionally entirely unslipped. Extensive firing clouds.
Paste, temper: n.d.
Colour: Red (Hay's Russet and unspecified reds)
Decoration: none.
Provenance: Government Collection, 1; 0-30 cm., Chamber 1; fill of slope, Chamber 3 (1).
Comparative material: Reported from Tzimin Kax in Holmul v contexts Thompson, 1931, figs. 11k and 13f), but not from other Chiquibul sites. Some Spanish Lookout phase redware vessels from Baking Pot are of forms essentially the same as those of the Quiroz specimens (Bullard and Bullard, 1965, fig. 9c-e), as are Benque Viejo IIIb dishes

from Xunantunich (Thompson, 1942, fig. 13). A comparable date is probable for the Quiroz material.

Remarks: Included in this category are sherds which may be from round-side dishes without annular base, lumped with the annular-based specimens on the basis of similarity in surface treatment.

Plate, round-side, outcurving rim (1)

Illustration: Fig. 12l

Form: Rounded, medium-thick sides, projecting sharply in rim area, which is thickened and grooved. Lip rounded, base apparently flat.

Size: Diameter 23.1 cm.; height 4.4 cm.; thickness 0.5 cm., increasing to 1.0 cm. in rim area.

Surface: Interior slipped, moderate burnish, slip splotched and streaked; exterior slipped with slight burnish, firing cloud and mineral (?) stain. Base slipped but unburnished.

Paste: Hard, with mostly angular fracture; dark grey core, orange surfaces.

Temper: Calcite, minute grains.

Colour: Orange (Ferruginous).

Decoration: Two preslip groove-incised lines encircling vessel at rim interior; exterior plain.

Provenance: Ledge above Chamber 2.

Comparative material: A dish of somewhat similar shape is reported from Tzimin Kax (Thompson, 1931, fig. 11f), dating from Holmul v, but a much closer resemblance exists between the Quiroz specimen and redware vessels from Benque Viejo Ia (early Pre-Classic) at Xunantunich (Thompson, 1942, fig. 4d-f), which also have grooved rims. Grooved protruding rims appear to occur at Barton Ramie in brownware (San Felipe Brown: San Felipe Variety), in the Mount Hope ceramic complex of late Preclassic (300 B.C.-A.D. 100) times (Willey *et al.*, 1965, fig. 197b), and are reported in redware, with double rim groove, from Chicanel deposits at Uaxactun (Sierra Red; Smith, 1955, fig. 16c6,7, and Smith and Gifford, 1966, p. 134). A late Pre-Classic date is very probable for the Quiroz specimen, and its presence on the ledge in Chamber 2 is accordingly difficult to explain.

Plate, heavy, or platter (rim 5, body 6)

Illustration: none

Form: Generally resembling shallow round-side plates, but apparently of lower profile than most plates, and with markedly greater diameter and thickness. Sides uniformly thick; lip rounded, base unknown.

Size: Diameter, n.d.; height, n.d.; thickness 0.9-1.5 cm.

Surface: Interior slipped, often poorly smoothed, with slight burnish, frequent firing clouds; exterior unslipped, or slipped in rim area only(?).

Paste, temper: n.d. Sherds are friable.

Colour: Interior orange (Kaiser Brown); exterior black.

Decoration: none

Provenance: 20-30 cm., Chamber 1.

Comparative material: Sherds are too small to permit comparisons.

Remarks: Though size of sherds will not permit specific diameter or height measurements, the fragments are sufficiently large to indicate the diameter and height characteristics noted above.

Basin or platter, shallow, upturned rim (rim 6, body 1)

Illustration: Fig. 12m,n

Form: A flat or slightly upcurving sheet with upturned rim, often thickened in area of body/rim junction. Sides medium-thick, increasing to thick at rim/body junction or near lip. Lip rounded, pointed, or concave (one specimen only); base flat.

Size: Diameter (estimated) 30-35 cm.; height (estimated) 3.3-4.5 cm.; thickness 0.55-0.7, increasing to 0.9-1.1 cm. in thickened areas.

Surface: Interior slipped, with slight to moderate burnish, occasional mineral (?) stain; exterior unslipped, or slipped in rim area only. Base often poorly smoothed.

Paste: Friable to somewhat hard, with crumbly to slightly angular fracture. Uniformly orange to buff-orange, or with grey exterior half and orange interior.

Temper: Calcite, minute to very small grains, with rare small grains. Minor admixture of very small quartz grains and minute to very small hematite nodules, plus opaque angular fragments, in two specimens.

Colour: Red (Hay's Russet).

Decoration: none

Provenance: 0-10 cm., Chamber 1; ledge, Chamber 2.

Comparative material: Apparently unreported from sites in the comparative area.

Remarks: The rim/body profile of some of the sherds approaches that of large incurved-rim flaring-side bowls or basins from Uaxactun (Smith, 1955, fig. 49a9, 10), but the rim contours of the Quiroz specimens, plus the surface treatment of the exterior base, appear to preclude classification of the sherds as bowl or basin fragments.

Basin, thickened or bolstered rim (rim 8, body 0)

Illustration: none

Form: Rounded, medium-thick sides, with external thickening at rim. Lip flat to rounded; base form unknown.

Size: Diameter, n.d. (probably in excess of 40 cm.); height, n.d. (probably 15 cm. or more); thickness 0.7-0.8 cm., possibly greater in lower body.

Surface: Interior unslipped, moderately well smoothed; exterior slipped with moderate burnish, base perhaps unslipped.

Paste: Friable, with crumbly fracture; uniform orange.

Temper: Calcite, very small to small grains.

Colour: Orange (Sayal Brown, Mars Brown).

Decoration: none

Provenance: 0-4 cm., Chamber 1; ledge, Chamber 2.
Comparative material: Sherds are too small to permit comparison.

Vase, tripod, cylindrical (rim 12, body 41)
Illustration: Fig. 12o
Form: Vertical, thin sides; lip pointed; base flat.
Size: Diameter 13.3 cm.; height, n.d. (probably about 1.6x diameter); thickness 0.5 cm.
Surface: Interior, unslipped; exterior slipped with moderate to high burnish except for base and feet, which are unslipped. Mineral (?) stain extensive on exterior.
Paste: Soft to moderately hard, with partly angular fracture; uniform orange to orange with thin grey layers at both surfaces.
Temper: Calcite, minute to very small grains.
Colour: Orange (Zinc Orange, Mars Orange), brownish-orange (Tawny), and black.
Decoration: Interior, plain. Exterior with postfire vertical groove-incised lines; raised band encircling body near base, separated into three narrow bands by preslip irregular groove-incised lines, body and rim apparently plain; basal ridge with indentation(s); also plain.
Appendages: Single partly reconstructable specimen has three solid nubbin feet with expanding lower portion and flat bottom. Also one base with solid slab feet.
Provenance: 0-40 cm., Chamber 1 (partly reconstructable specimen is from 0-20 cm.).
Comparative material: A vase resembling the illustrated specimen, but with more extensive decoration, was recovered from Actun Balam (Pendergast, 1969, fig. 6c). The foot form occurs on a cylindrical (?) vessel from a Benque Viejo IV context at Xunantunich (Thompson, 1942, fig. 49c), but the form and decoration of the Quiroz vessel do not appear to be duplicated here or elsewhere in the comparative area, though ribbed cylindrical vases occur in Tepeu 2 and 3 at Uaxactun (Smith, 1955, fig. 43a 1,2). A Tepeu 3 date seems most likely for vases of this form; the remaining sherds are too small to permit meaningful comparisons.
Remarks: Nearly 75% of the sample is referable to the form represented by the illustrated specimen.

Vase, slightly restricted orifice or barrel-shape (rim 8, body 16)
Illustration: Fig. 13a,b
Form: Vertical to slightly rounded thin sides, sloping or curving inward in the upper body to produce a slightly restricted orifice. Lip slightly pointed; base flat to very slightly concave. One specimen with medium-thick sides.
Size: (One specimen only except for thickness.) Diameter 12.1 cm., maximum 14.6 cm.; height 19.3 cm.; thickness 0.5-0.6 cm.
Surface: Interior unslipped, with chalky white appearance, or slipped (one

specimen only; see remarks). Exterior slipped with high to very high burnish in all specimens but one, which has slight and patchy burnish.

Paste: Hard, with angular fracture, in all but one anomalous specimen; uniform buff. Single specimen with moderately hard paste, partly angular fracture; uniform buff-orange.

Temper: Very small amounts of calcite, in minute grains, in buff-paste specimens; larger amounts of calcite, minute to very small grains, in single sherd.

Colour: Red (Vinaceous-Rufous, Hay's Russet); single sherd is orange (Tawny).

Decoration: Pairs of preslip groove-incised lines encircling body below rim and above base, enclosing similar lines slanting down to the right, creating the effect of false gadrooning. One sherd has two preslip wide grooves encircling body below rim, enclosing postfire horizontal lines bordering rectangles containing random (?) vertical lines and gouges.

Provenance: 0-48 cm., Chamber 1; surface, chambers 2 and 3.

Comparative material: Not parallelled by specimens from any of the sites within the comparative area. The barrel-shape may be related to that of the Actun Balam Vase (Pendergast, 1969, fig. 11), a specimen from Cubeta Cave (Pendergast, 1968, fig. 6), and others of this shape from Barton Ramie (Willey *et al.*, 1965, figs. 245 and 246), with a Spanish Lookout ceramic complex affiliation (A.D. 700-1000), and Uaxactun, of Tepeu 3 date (Smith, 1955, fig. 49b3). These similarities are perhaps too general to provide a basis for dating, as none of the listed vessels is comparable to the Quiroz specimens in surface treatment. Stratigraphic data from Quiroz are inconclusive, though the bulk of the sample comes from the surface or the 0-10 cm. stratum in Chamber 1. A Late Classic date is certain, and placement in Tepeu 2 or 3 seems likely.

Remarks: The single anomalous sherd differs from the remainder of the sample in all respects, and may be from a different form of vessel, though the profile suggests classification as a barrel-shaped vase (Fig. 13b).

Jar, globular, outcurving rim (rim 221, body 1422; see remarks)

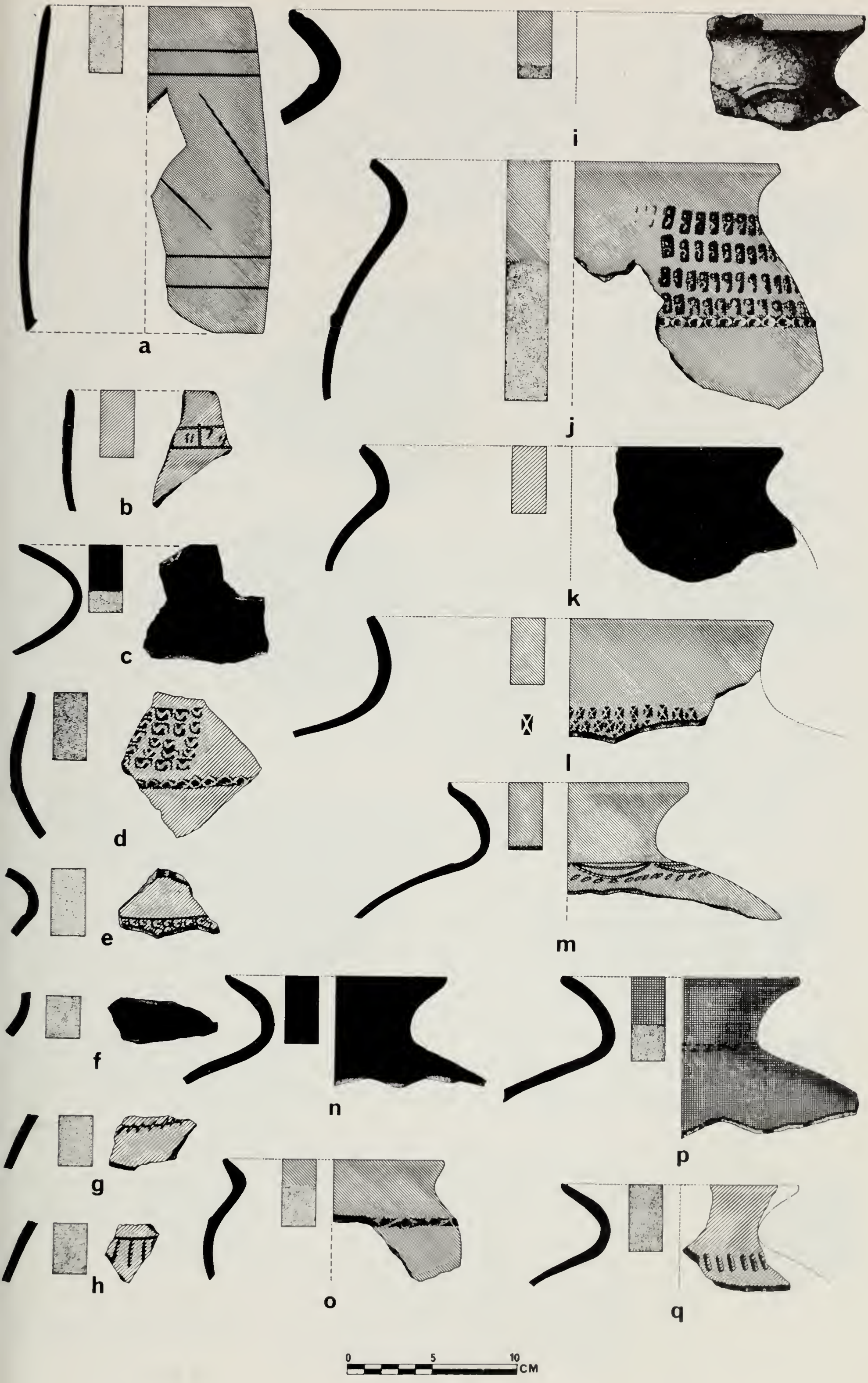
Illustration: Fig. 13c-q, 14a-k

Form: Rounded, thin to medium-thick sides, curving inward in upper body and then outward in rim area. Vertical neck rare; neck consists of outcurved rim in almost all specimens, and hence is low in ratio to rim diameter. Orifice probably small relative to maximum diameter in most specimens, but this can only be calculated for three vessels. Lip rounded, grooved, slightly pointed, or rarely sharply pointed. Base rounded, or occasionally slightly flattened.

Fig. 13 Monochrome vases and jars.

a,b: Barrel-shaped vases, preslip and postfire groove-incised decoration.

c-q: Globular jars with outcurving rim, with stamp, tool-mark, incised and impressed fillet decoration.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Size: Diameter at rim 13.1-34.1 cm., orifice 7.2-27.9 cm., maximum (three specimens only) 29.2-41.1 cm.; height (one specimen only) 43.9 cm., neck height 1.9-4.5 cm.; thickness 0.5-0.9 cm., with one specimen 1.2 cm. Maximum diameter: orifice diameter ratio (three vessels only) 1.5:1-3.6:1; rim diameter: neck height ratio (10 vessels) 3.4:1-8.5:1, average 5.7:1.

Surface: Interior unslipped, or slipped at rim only; exterior slipped over entire surface, or in upper body or rim area only. Slipped areas exhibit slight to moderate burnish, and firing clouds are common on the exterior. Both surfaces are generally well-smoothed, and interiors are in most cases better-smoothed than in unslipped jars. Erosion and flaking of slip are common.

Paste: Moderately hard, with partly to largely angular fracture, or rarely soft, with crumbly fracture; uniform orange, buff-orange, brownish-orange, or grey, with rare occurrences of grey core and orange to buff-orange surfaces. Thinner sherds, especially in lower body areas where thickness may decrease to 0.3 cm., tend to be the hardest, and to ring when struck.

Temper: Calcite, minute to very small grains, occasionally with a few small grains. Minor admixtures of greyish or black angular fragments occur in most sherds. Temper is visible on unslipped portions of vessel exteriors, but not on slipped surfaces, nor usually on unslipped interior surfaces. Quantities are generally high in proportion to sherd thickness.

Colour: Orange (Ferruginous, Cinnamon-Rufous, Kaiser Brown, Tawny, Mars Brown), red (Vinaceous-Rufous, Hay's Russet), brown (Chestnut Brown, Walnut Brown, Carob Brown, Sayal Brown, Verona Brown), and black.

Decoration: Single or multiple encircling bands of unit stamps on shoulder, upper body, or both; preslip slashes or tool impressions, occasionally combined, or with encircling preslip lines, generally at shoulder but occasionally on upper body, or both; stamps and/or tool impressions on slipped upper body, with slipped area bordered at bottom by appliqué encircling impressed fillet; encircling impressed fillet separating plain slipped upper body from unslipped lower body; slight elevation of body surface at junction with neck base, producing channel effect, with lower edge of channel decorated with preslip groove-incised pairs of swag lines accompanied by encircling line of slanted tool marks; postfire encircling line at shoulder with perpendicular tool

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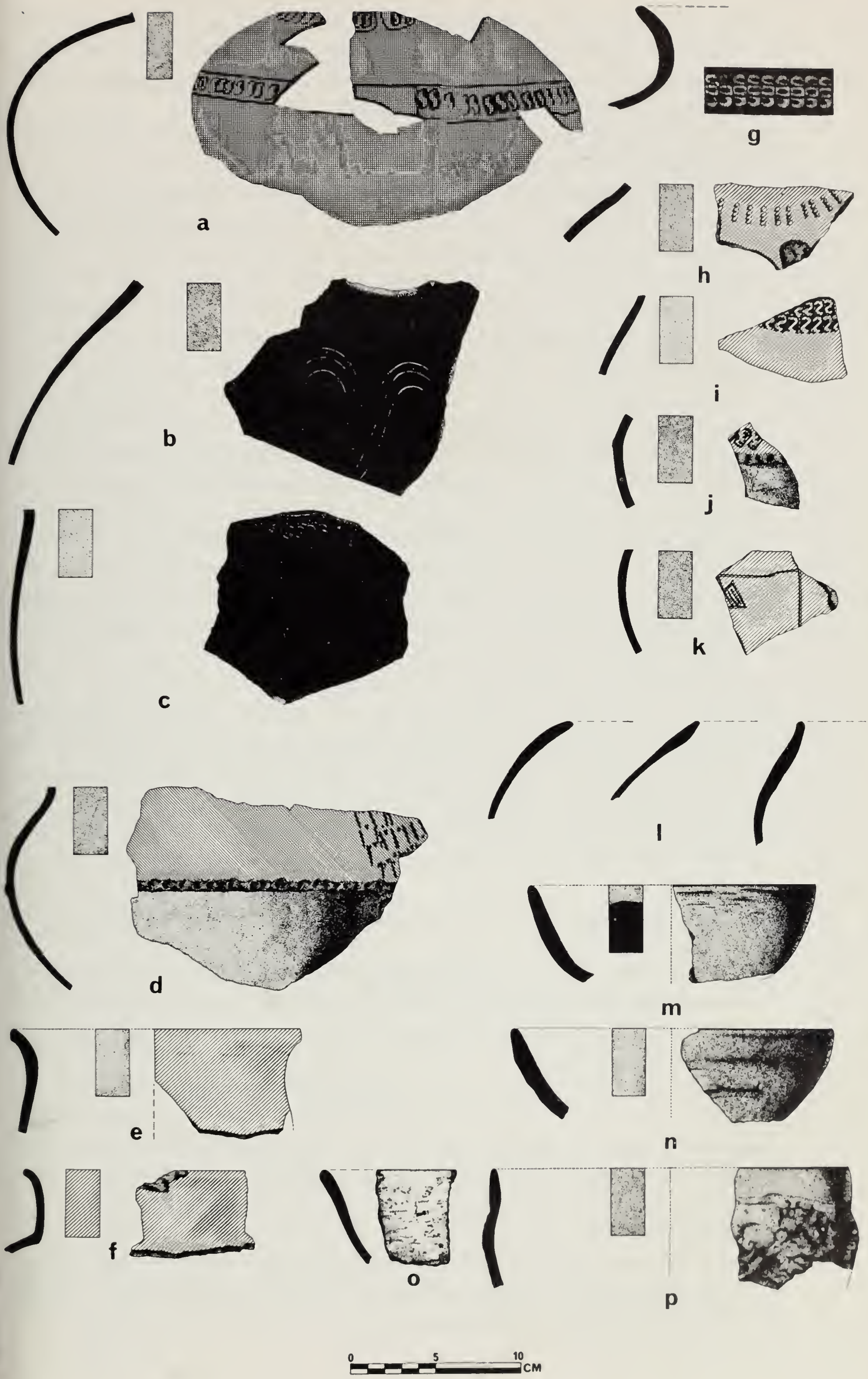
Fig. 14	Monochrome slipped jars and unslipped bowls.
a-k:	Slipped globular jars with outcurving rim, with stamp, tool-mark, incised and impressed fillet decoration. *g* is from Government Collection.
l:	Restricted-orifice slipped jars, undecorated.
m,n:	Round-side unslipped bowls.
o:	Outcurving-side unslipped bowl.
p:	Round-side bowl with vertical rim, unslipped. Note extreme roughness of exterior below the rim.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marks crossing line; postfire crudely-executed loops composed of two parallel lines, with third line bordering apex of each loop, on body; postfire crude groove-incised panel(s) on body, enclosing incised triangles with internal slashes; also plain.

Provenance: 0-70 cm., Chamber 1; surfaces of all other areas of cave, including vessel group in Chamber 6.

Comparative material: Jars with stamped designs are known from Actun Balam (Pendergast, 1969, pp. 29-30, fig. 9c-f) in slipped monochrome, and unslipped specimens are reported from Rio Frio E (Pendergast, 1970, fig. 11o), Lubaantun (Joyce, 1926, plate XXVI, 2), and Mountain Cow and Poptun (Kidder, 1954, p. 12, fig. 7). The stamp-decorated specimens from Quiroz come principally from the 0-10 cm. level in Chamber 1 and from the surface, and hence may be of late date. Comparison of the Quiroz sample with that from other areas poses problems, for temporal significance of jar shapes and dimensions remains debatable. The appliqué fillet decoration present on a few Quiroz specimens (total 36 sherds) is represented in the 0-30 cm. levels of the Chamber 1 deposit, in Chamber 2, and in the vessel group from Chamber 6. On the basis of data from Uaxactun (Smith, 1955, p. 51), the fillet might be a Tzakol 2 or 3 marker, but is more likely to be of Tepeu 1 date. While specific decorative motifs may indicate dating of portions of the slipped jar sample, the category as a whole appears to span the entire use of Quiroz, with the possible exception of the earliest strata in Chamber 1.

Remarks: All slipped jar body sherds are included in this category, as most can be related to jar rims on the basis of surface treatment, but distinction between body sherds of outcurving-rim jars and those of incurving-rim jars is not possible except in those cases in which portions of the vessel shoulder remain. Metric data and temper and paste observations are derived from rim sherds only.

Jar, restricted orifice (rim 41; see remarks for preceding category).

Illustration: Fig. 14l

Form: Rounded, thin to medium-thick sides, thickening in rim area in most instances; upper body curved inward to produce restricted orifice, rarely with slightly upturned rim. Lip rounded to slightly pointed; base form unknown.

Size: Diameter, n.d.; height, n.d.; thickness 0.35-0.7 cm., 0.7-0.75 cm. at rim.

Surface: Interior unslipped, or slipped in rim area only (uncommon); exterior slipped with moderate burnish, occasional firing clouds. Lower body and/or base possibly unslipped in some specimens.

Paste, temper: n.d.

Colour: Red (Vinaceous-Rufous, Hay's Russet), orange (Ferruginous, Cinnamon-Rufous, Kaiser Brown, Mikado Brown, Sayal Brown, Tawny), and brown (Mummy Brown).

Decoration: none

Provenance: 0-40 cm., Chamber 1; 0-5 cm., Chamber 3; surface, Chamber 5.

Comparative material: The small size of the sherds makes determination of vessel profile difficult, and hence intersite comparisons are not possible on a specific level. The vessels may resemble barrel-shaped jars from Benque Viejo III deposits at Xunantunch (Thompson, 1942, fig. 27), though the lip forms are different. A Late Classic date is probable for the Quiroz material.

Jar, ovoid (1)

Illustration: none

Form: Rounded, medium-thick sides, tapering inward in upper body to produce probably very small orifice. Lip form unknown; base apparently flat.

Size: Diameter, n.d.; height, n.d.; thickness 0.75 cm.

Surface: Interior unslipped, poorly smoothed; exterior slipped, with slight burnish, eroded. Base probably unslipped.

Paste, temper: n.d.

Colour: Red (specific colour not determinable).

Decoration: Apparently an encircling groove below rim.

Provenance: Surface, outside mouth of cave.

Comparative material: The sherd is too small to permit comparison.

Jar (?), miniature (rim 1, body 0)

Illustration: none

Form: Rounded, thin sides, curving inward in upper body, perhaps with vertical neck. Lip form unknown; base form unknown.

Size: Diameter, n.d.; height, n.d.; thickness 0.3 cm.

Surface: Interior unslipped; exterior slipped with moderate burnish, base perhaps unslipped.

Paste, temper: n.d.

Colour: Orange (Sayal Brown).

Decoration: none

Provenance: 30-40 cm., alcove off Chamber 1.

Comparative material: Sherd is too small to permit comparison.

UNSLIPPED WARE (19,440)

I. Unslipped monochrome (19,440)

Bowl, round-side (rim 29, body 12)

Illustration: Fig. 14m,n

Form: Rounded, medium-thick to thick sides; lip rounded, base rounded to slightly flattened.

Size: Diameter (two specimens only) 17.0-19.1 cm.; height (estimated) 6.5-8.0 cm.; thickness 0.8-1.1 cm.

Surface: Interior generally well smoothed; exterior somewhat less well smoothed than interior in most cases, with coil marks occasionally visible.

Paste: Soft and friable, with crumbly fracture; uniformly orange to buff-orange, or with buff core and thin grey layers at surfaces, or with orange exterior half and grey interior.

Temper: Calcite, very small to small grains, in moderately large quantities with considerable amounts visible on both surfaces, but more pronounced on exterior. Inclusions of opaque angular fragments are common.

Colour: Orange, buff-orange, brown, and grey to dark grey-black.

Decoration: none

Provenance: 20-60 cm., Chamber 1; surface, Chamber 2. Four sherds from Government Collection.

Comparative material: The form is not sufficiently distinctive to warrant intersite comparisons.

Bowl, round-side, incurving rim (rim 13, body 3)

Illustration: none

Form: Rounded, medium-thick sides, curving inward in rim area to produce slightly restricted orifice. Rim is thickened in some cases. Lip flat to occasionally rounded; base rounded to possibly somewhat flattened.

Size: Diameter, n.d.; height, n.d.; thickness 0.55-0.7 cm. (Dimensions probably similar to those of slipped bowls of the same shape.)

Surface: Interior generally well smoothed; exterior somewhat less well smoothed, with occasional smoothing marks visible, especially on lower body.

Paste: Soft, with crumbly fracture, to occasionally moderately hard with slightly angular fracture. Uniform orange or grey throughout.

Temper: Calcite, very small grains, with frequent inclusions of opaque angular fragments and occasional small hematite nodules; two sherds with tuff temper.

Colour: Grey predominates; also buff and brownish-orange.

Decoration: none

Provenance: 0-50 cm., Chamber 1; surface, Chamber 2; five sherds from Government Collection.

Comparative material: The comparisons drawn for slipped incurving-rim round-side bowls almost certainly apply to the unslipped specimens as well. A Tepeu 2-3 date is indicated for the Quiroz sherds. The two tuff-tempered sherds point to a Belize Valley or related source (see general ceramic discussion, below).

Bowl, outcurving-side (rim 1, body 0)

Illustration: Fig. 14o

Form: Outcurving, medium-thick sides; lip rounded, base form unknown.

Size: Diameter, n.d.; height, n.d.; thickness 0.7 cm.

Surface: Interior moderately well smoothed; exterior poorly smoothed, with smoothing marks and some coil lines visible, and also pitted (from burn-out of temper?).

Paste: Soft, with crumbly fracture; uniform buff-orange.

Temper: Calcite, very small grains. Quantity of temper high relative to sherd thickness.

Colour: Orange.

Decoration: none

Provenance: Surface, passageway between chambers 2 and 3.

Comparative material: The sherd is too small to permit comparison.

Bowl, round-side, vertical rim (rim 2, body 7; probably one vessel.)

Illustration: Fig. 14p

Form: Rounded, medium-thick sides, curving inward to junction with low vertical to slightly round-sided rim. Lip slightly pointed; base form unknown.

Size: Diameter at rim 21.2 cm., maximum 22.3 cm.; height, n.d.; thickness 0.7 cm.

Surface: Interior well-smoothed in rim area but irregular and granular in lower body; exterior well-smoothed in rim area, but body is exceedingly rough, giving the appearance of having been broken away from some other element of the vessel, though this seems not to have been the case.

Paste: Soft, with crumbly fracture; orange interior section, grey exterior.

Temper: Calcite, very small to occasionally small grains, in large quantities. Very large amounts are visible on interior surface and the rough area of the exterior.

Colour: Brownish-orange.

Decoration: none

Provenance: Atop Floor 1, Chamber 1.

Comparative material: Nothing of comparable shape and crudity of manufacture is known from the comparative area.

Bowl, round-side, outcurving rim (rim 38, body 95)

Illustration: Fig. 15a

Form: Rounded, thin to occasionally medium-thick sides, curving inward to junction with slightly to sharply outcurving rim. Thickness of sides increases in shoulder area and/or rim to thick or very thick. Lip rounded; base rounded to slightly flattened.

Size: Diameter, n.d.; height (estimated, two specimens only) 11-14 cm.; thickness in lower body 0.35-0.65 cm., increasing to 2.0-2.9 cm. in rim and shoulder.

Surface: Interior moderately well smoothed, but porous and granular; exterior somewhat less well smoothed, and equally porous and granular. Both surfaces tend to flake or crumble.

Paste: Extremely friable, with crumbly fracture; uniform pinkish-buff to rarely greyish-buff.

Temper: Calcite, small to medium grains, with occasional large grains plus moderate amounts of dark angular fragments, and occasional hematite nodules. Quantities of temper are very high relative to sherd thickness, and much temper is visible on surfaces, perhaps contributing to the granular and crumbly nature of both the interior and the exterior.

Colour: Orange (Mars Brown), pinkish (Light Congo Pink), or grey (Pale Smoke Gray).

Decoration: Occasional raking of shoulder area, possibly meant as decoration.

Provenance: 0-50 cm., Chamber 1; surface, Chamber 2; fill of slope, Chamber 3.

Comparative material: Previously reported only from Actun Balam (Pendergast, 1969, p. 34, fig. 9j-l), where no secure date can be assigned to the specimens.

Remarks: The vessels are so friable as to seem unsuited to long-term use, and this plus their distinctive appearance suggests a specialized use, which unfortunately cannot be specified at present.

Plate or platter, shallow (rim 2, body 0)

Illustration: none

Form: Essentially similar to slipped monochrome plate/platters; sherds are too small to permit detailed description, or comparisons.

Provenance: 0-10 cm. and 20-30 cm., Chamber 1.

Basin, round-side (rim 0, body 4)

Illustration: none

Form: Probably resembling round-side bowls, but of greater size and thickness. Sherds are too small to permit detailed description or comparisons.

Provenance: 40-50 cm., Chamber 1 (all parts of one vessel?).

Jar, globular, outcurving rim (rim 835, body 18,068; see remarks)

Illustration: Fig. 15b-o; plates 6 and 7.

Form: Rounded, thin to thick sides, curving inward in upper body to junction with low, outcurving neck. Lip rounded, pointed, flat, or occasionally concave or grooved; base generally rounded, occasionally somewhat flattened.

Size: Diameter at rim 13.3-24.8 cm., orifice 7.6-26.5 cm., maximum 16.7-34.8 cm.; height 19.0-62.4 cm., neck height 3.4-4.3 cm.; thickness 0.5-1.1 cm. Maximum diameter: orifice diameter ratio (three vessels

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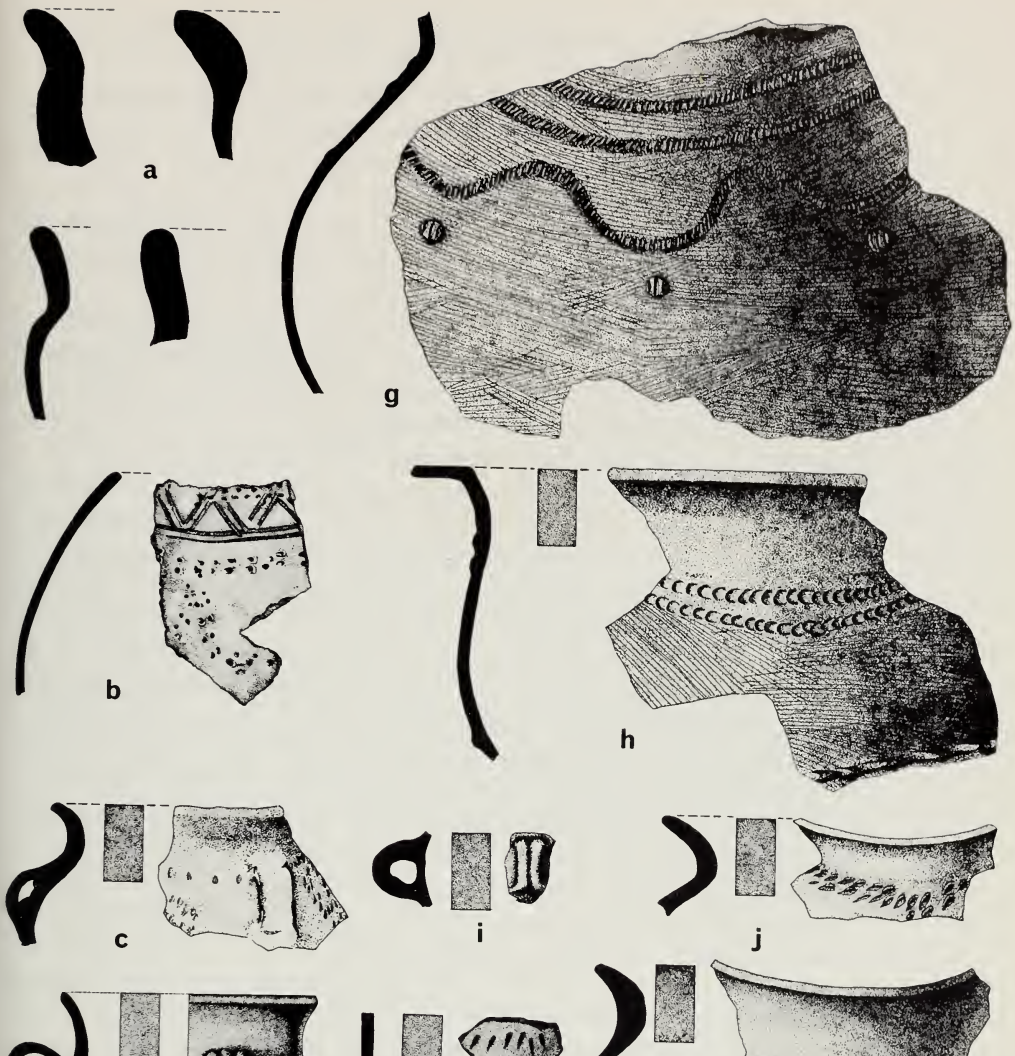
Fig. 15 Monochrome unslipped bowls, jars and candeleros.

a: Round-side bowls with outcurving rim, undecorated except for occasional raking at shoulder. A distinctive type in paste as well as thickness.

b-o: Globular jars with outcurving rim, decorated with punctuations, tool-marks appliqué fillets, incision, and unit-stamp motifs in one case only. *c, g-j, l* and *n* are from the Government Collection.

p,q: Candeleros. *p* is from the Government Collection.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only) 1.6:1-3:1; rim diameter: neck height ratio (two vessels only) 3.4:1-3.9:1.

Surface: Interior poorly to moderately well smoothed, with occasional coil marks or tool marks visible; exterior moderately well to very well smoothed, frequently burnished on at least the rim and upper body, occasionally over most of the body.

Paste: Soft, with crumbly fracture, to moderately hard with partly angular fracture. Uniformly buff-orange, orange, or brownish orange, or grey; also grey core with orange or buff surfaces.

Temper: Calcite, in very small, small, and medium grains. Minor admixtures of quartz, unidentified opaque angular fragments, and hematite nodules occur in most of the softer-paste sherds. Temper quantity is moderate to high relative to sherd thickness.

Colour: Black, grey, buff, orange, and rarely reddish-brown.

Decoration: Encircling single or multiple bands of punctations at shoulder, often accompanied by vertical or slanting rows, or random (?) groups of similar punctations on body; one or more encircling incised lines at or near shoulder, occasionally with other elements, including triangles, attached; single incised line at neck base accompanied by incised circles or loops on body; single incised line at neck base, bordered by lines of fingernail(?) gouges; encircling single or multiple bands of tool impressions at neck base and on shoulder; appliqué bosses, including circular, rectangular, and irregular angular forms, either plain or decorated with notches or lines; pair of encircling raised (appliqué?) ribs on shoulder, with vertical notching, accompanied by serpentine similar rib below, with appliqué notched boss at each downcurve; encircling appliqué fillets, at base of neck or on shoulder or upper body, either thumb-impressed, tool-impressed, or notched, or in one case perhaps tool-impressed so as to give the appearance of a series of small appliqué overlapped circlets; incised wavy lines or X motifs on body; stamped encircling band at neck base (two sherds only); also plain. Punctations and incised lines predominate; fillets occur on only 18 sherds.

Appendages: 11 vessels have handles, most of which are attached to the vessel shoulder, or to neck and shoulder. Forms include single, double, and triple coil, as well as broad strap. One single-coil handle is decorated with punctations, and two strap handles are notched along the sides. All of the vessels with handles appear to fall at the low end of the size range.

Provenance: All levels of the Chamber 1 deposit, and all other areas of the cave. Government Collection includes 170 unslipped jar sherds.

Comparative material: The statements regarding slipped jars apply equally to the unslipped specimens, except that unslipped jars are found in the bottom strata of the Chamber 1 deposit.

Remarks: A single sherd which appears to be the base of an unslipped jar shows the impression of a leaf on which it was presumably set while still plastic. The sherd comes from the 30-40 cm. level of Chamber 1.

All body sherds which could not be assigned to other categories were counted as jar body and placed in the outcurving-rim globular jar category, though some may well be fragments of vessels of the following category.

Jar, restricted orifice or thickened rim (rim 7, body 1)
Illustration: none
Form: Rounded, medium-thick to thick sides, curving inward in upper body to produce restricted orifice, in most cases approaching the "tecomate" shape. Rim occasionally thickened; lip rounded to flat. Base form unknown.
Size: Diameter, n.d.; height, n.d.; thickness 0.65-0.9 cm.
Surface: Interior moderately well smoothed, with occasional smoothing marks visible; exterior generally somewhat rough, but smoothing marks are not usually present.
Paste, temper: n.d.
Colour: Grey to occasionally brownish-orange.
Decoration: One specimen with appliqué bosses, remainder plain.
Provenance: Surface and atop Floor 1, Chamber 1; surface, passageway between chambers 2 and 3.
Comparative material: The form does not appear to have any direct parallels in the area of the comparative survey, though "tecomate"-shaped vessels, both slipped and unslipped, are known from Late Classic deposits at Altun Ha and apparently at a similar time level in the Peten, as well as earlier. The stratigraphic position of the Quiroz specimens may point to a late date, though this sort of evidence is far from unequivocal.

Jar, ovoid (rim 0, body 1)
Illustration: none
Form: Rounded, medium-thick sides, sloping or curving inward slightly in upper body to produce oval profile. Lip form unknown; base rounded (?).
Size: Diameter, n.d.; height, n.d.; thickness 0.7 cm.
Surface: Interior poorly smoothed, with smoothing marks visible over most of surface; exterior moderately well smoothed, perhaps burnished in upper part of body.
Paste, temper: n.d.
Colour: Orange.
Decoration: none.
Provenance: Surface, Chamber 1.
Comparative material: The sherd is too small to permit comparison.

Candelero (7)
Illustration: Fig. 15p,q
Form: Vertical, slightly rounded, or occasionally flaring, thin sides; lip rounded to flattened, base generally flat. Perforations, either three regu-

larly spaced around body or a larger number randomly spaced, pierce the sides.

Size: Diameter (2 specimens) 2.5-4.9 cm.; height (2 specimens) 3.0-5.2 cm.; thickness 0.35-0.4 cm. Perforation diameter 0.25-0.4 cm.

Surface: Interior very rough, usually with projections where perforating tool has penetrated from the exterior; often blackened, especially in lower body. Exterior usually rough, with slight ridges around perforations in some cases.

Paste: Moderately hard to hard, with partly angular fracture; uniformly greyish-brown to orange-brown. It is not clear whether specimens were fired, or simply hardened by burning of material within them; paste characteristics suggest the latter.

Temper: All specimens probably untempered, a fact which may support the suggestion made above regarding the unfired nature of the objects.

Colour: Greyish-brown to orange-brown.

Decoration: none.

Provenance: 0-20 cm., Chamber 1; one specimen from Government Collection.

Comparative material: Candeleros are reported from Actun Balam (Pendergast, 1969, p. 38, fig. 6k-n), where the variety of forms is greater than at Quiroz. There are no reported occurrences of candeleros in the Belize Valley and surrounding areas, though the form is moderately common at Altun Ha. It is also known at Uaxactun in Tepeu 3 (Smith, 1955, fig. 67a3,4), where one of the illustrated specimens (fig. 67a3) closely resembles the Quiroz candelero in the Government Collection. The Uaxactun date is probably applicable to the Quiroz specimens.

Remarks: The holes in candelero bodies are probably vents, perhaps connected with burning of material (incense?) in the objects.

Incensario, cylindrical (?), with handled lid (lid 200, base 81)

Illustration: Plate 8.

Form: Probably vertical, medium-thick to thick sides, with large roughly triangular vents apparently spaced around body, perhaps near both base and top. Lip form unknown; base flat, with lateral projection similar to a vessel rim, terminating in a thickened rounded lip. Lid has the form of an outcurving-side plate or dish, with a handle in the interior composed of two thick coils which cross at right angles, occasionally with an appliqué boss at the centre.

Size: Body diameter 16.8 cm., maximum at basal projection *c.* 20.1 cm.; height, n.d.; thickness 0.8-1.2 cm. Lid diameter 40.4 cm.; height *c.* 10 cm.; thickness 0.7-0.9 cm., handle diameter *c.* 2.0 cm.

Surface: Base interior moderately well smoothed, extensively blackened; exterior well-smoothed. Lid interior well smoothed, though coil handles are rather rough; generally extensively blackened. Lid exterior scored heavily, with either right-angle or diagonal lines; extensively blackened and soot-encrusted, with some pitting apparently resulting from post-fire burning.

Paste: Soft, with crumbly fracture; lid generally shot through with carbon, base occasionally also blackened, but generally showing uniform reddish-brown colour.

Temper: Calcite, small to medium or occasionally large grains, with admixture of a great variety of material, including what is probably fine river gravel. Considerable temper is visible on unburned surfaces.

Colour: Reddish-brown.

Decoration: Apparently none other than the appliqué boss which may occur at the junction of the two handle coils.

Provenance: 0-40 cm., Chamber 1; fill of slope, Chamber 3; surface outside mouth of cave and in Chamber 2.

Comparative material: The same type of incensario is reported from Awe Cave (Digby, 1958, fig. 3, which includes reconstruction drawings of lids) but is apparently unknown elsewhere, though it may be related to vessels with interior handles recovered at Cahal Pichik (Mountain Cow) in a Holmul v context (Thompson, 1931, p. 245, fig. 10d). The form appears to be distinctive of the Chiquibul, replacing the cylindrical incensarios with appliqué human faces and figures which occur in the Belize Valley and surrounding areas. A Tepeu 2-3 date seems likely for the form at both Awe Cave and Quiroz.

Miscellaneous unslipped sherds (35)

Whole and fragmentary hollow globular or cylindrical feet, probably from slipped dishes or plates (32); flat base sherds (2); and annular base (1).

GENERAL DISCUSSION

Though both the descriptive and the provenance data on the Quiroz collection create an initial impression of heterogeneity and chaos, there are in fact some patterns which emerge from examination of the collection as a whole. The most outstanding among these is the fact that all of the vessels analyzed are calcite-tempered, in marked contrast with those of the Belize Valley and related sites, including Rio Frio E. This bears out the somewhat less detailed observations made on the pottery of Actun Balam, and suggests that absence of tuff and sherd temper may be one of the several elements distinguishing Chiquibul pottery from that of neighbouring areas. There seems, however, to be no temper or paste characteristic unique to the Chiquibul, so that analysis of these aspects of pottery is more likely to reveal trade pieces in the Chiquibul than vessels of Chiquibul origin elsewhere. Recognition of Chiquibul pottery in other areas will, it appears, have to depend largely or wholly on stylistic elements, of which at least a few are exemplified in the Quiroz collection. Such forms as false-gadrooned barrel-shaped vases and laterally-ribbed orangeware or brownware nubbin-footed cylindrical vases are among potential markers of the Chiquibul, as are both the motifs and the design layout of polychrome bowls and plates, but it is difficult or impossible at present to analyze any of these in either spatial or temporal terms.

The single decorative motif which can be recognized with reasonable certainty as a marker of the Chiquibul and possibly also placed in time is the series of unit-stamped designs occurring on slipped bowls and jars, and very rarely on unslipped jars. The only other recorded occurrence of these designs outside the Chiquibul lies very near the area border, a fact which suggests that stimulus or trade from the Chiquibul itself is probably involved. Fortunately, the Quiroz excavations provide some possibly meaningful data on the relationship between stamp-decorated vessels and other ceramics, despite the difficulties arising from the mixed nature of the Chamber 1 deposit. Table 1 presents some of the distributional data from the Chamber 1 excavations, restricted to slipped monochrome but with an indication of total sherd sample from each level.

Table 1

Level	*Stamped bowls No./%*	*Other bowls* No./%*	*Stamped jars No./%*	*Other jars No./%*	*Monochrome total*	*Level total*
Surface	16/3.1%	209/40.9%	3/0.6%	252/49.3%	511	1814
0-10 cm.	56/4.8%	552/47.0%	20/1.7%	484/41.2%	1177	8089
10-20 cm.	8/1.6%	231/46.3%	3/0.6%	228/45.7%	499	4767
20-30 cm.	2/1.2%	64/37.0%	0	61/35.2%	173	1252
30-40 cm.	2/1.5%	46/35.1%	0	74/56.5%	131	832
40-50 cm.	0	11/21.1%	0	37/71.1%	52	379
50-60 cm.	0	7/35.0%	0	12/60.0%	20	146
60-70 cm.	0	1/14.3%	0	6/85.7%	7	69
70-80 cm.	0	1/100%	0	0	1	22
80-90 cm.	0	0	0	0	0	6
Totals	84	1122	26	1154	2571	17,376

* = all round-side bowls other than stamped.

From the table it can be seen that stamped vessels are a small percentage of the total slipped monochrome collection in any level in which they occur, never exceeding 6.5% of the sample. Despite the relatively small size of the stamped sample, however, an element of significance may exist in the vertical distributions of stamped specimens. For stamped bowls, almost 86% of the sample occurs in the surface and 0-10 cm. levels, while the same levels yielded 88% of the stamped jars. Whatever the degree of mixture of the deposit, these figures seem to be comparatively good indicators of the late date of stamped vessels in the Quiroz sample, and probably in the Chiquibul as a whole. Though percentage distributions of various other categories could be similarly plotted, none appears to produce a meaningful pattern, and hence the reader has been spared further excusions into numberland.

Miscellaneous Artifacts

In addition to the artifacts of the various offerings, the excavations and surface investigation yielded a number of isolated objects, most of which were recovered from the Chamber 1 deposit. The relationships of the artifacts to the ceramic collection can be judged from the stratigraphic data presented for those objects from the Chamber 1 deposit, and indications of possible temporal placement are also provided in some cases by comparative material from other sites, but we are still unfortunately far from being able to use most non-ceramic artifacts as critical time markers with anything approaching certainty. The comparative data presented here are not intended to be complete, but rather are generally restricted to sites in or near the central and southern parts of British Honduras(Belize). For objects from the several offerings, cross-references will guide the reader to information on associations, but data on dimensions, material, and comparisons are included in this section, as are speculations as to sources for the raw materials involved. Unless otherwise indicated, the artifacts are from the Chamber 1 deposit. All measurements are the maximum for each dimension.

CHIPPED STONE (28 items)

Blade, bifacial, stemmed (1) Moderately well-chipped, with somewhat irregular stem base, falling into the tapered-stem long blade category (Fig. 16a). Biconvex section. Possibly a projectile point, though use as a knife is equally likely. *Length*: 10.1 cm.; *Width*: blade 4.5 cm., stem 2.7 cm.; *Thickness*: 0.8 cm. *Material*: quartzite. *Provenance*: 0-10 cm. level. *Comparative material*: A much less well-made specimen is reported from Actun Balam (Pendergast, 1969, p. 53, fig. 10u), and also from Baking Pot (Ricketson, 1931, plate 14g) and Barton Ramie, where the form is essentially Late Classic, possibly extending into early Postclassic times (Willey *et al.*, 1965, pp. 412-413). Similar specimens are reported from Lubaantun (Joyce, 1926, plate XXIV, fig. 3) and San José (Thompson, 1939, p. 169, plate 25a,d), with a date in the latter case falling in the early to middle portion of the Late Classic. The form is predominantly Tepeu at Uaxactun (Kidder, 1947, pp. 8-10, fig. 65), and a late Tepeu (2-3) date is probable for the Quiroz specimen.

Blade, bifacial, corner-notched (1) Thin and well-chipped, with regular outline, notched at an angle from the corners, producing the effect of a broad, very short stem; base concave (Fig. 16b). Thin biconvex section. Almost certainly a projectile point. *Length*: 6.5 cm.; *Width*: 2.85 cm.; *Thickness*: 0.6 cm. *Material*: chalcedony. *Provenance*: 0-10 cm. level. *Comparative material*: Reported from the terminal Classic or early Postclassic at San José (San José V; Thompson, 1939, plate 25b2), and recovered at Altun Ha from approximately the same time level.

Blade, bifacial, heavy ovate (1) Rather crudely chipped, with somewhat irregular outline and thick biconvex section (Fig. 16c). A generalpurpose cutting/chopping tool. *Length*: 11.1 cm.; *Width*: 5.6 cm.; *Thickness*: 3.2 cm. *Material*: chert. *Provenance*: 0-4 cm. level. *Comparative material*: This is the "Standard Chopper" of Willey *et al.* (1965, pp. 423-429), a tool class occurring in virtually all periods at all Maya sites. No temporal significance is yet apparent in form and chipping variations; the stratigraphic position of this specimen may suggest contemporaneity with the blades discussed above.

Blade, bifacial, heavy plano-convex (1) Tip fragment of a blade, with chipping similar in quality to that of the ovate form, reshaped after breakage for use as a scraper (?); thick plano-convex section (Fig. 16d). *Length*: 6.5 cm.; *Width*: 5.1 cm.; *Thickness*: 2.8 cm. *Material*: chert. *Provenance*: Surface of slope between chambers 1 and 2. Not sufficiently distinctive for comparison.

Blades, obsidian flake (21) All specimens fragmentary; all appear to be the standard flake blade rather than the lancet type. *Width*: 0.75-1.45 cm.; *Thickness*: 0.15-0.4 cm. *Provenance*: surface and all levels to 70 cm. of Chamber 1 deposit.

Flakes (2) *Material*: obsidian.

Hammerstones, cobble (2) One elongated and one roughly rounded specimen; both are faceted cobbles with portions of cortex remaining between facets, and battering generally at facet junctions (Fig. 16e). *Length* (dimensions for one specimen only): 9.4 cm.; *Width*: 8.0 cm.; *Thickness*: 7.2 cm. *Material*: quartzite. *Provenance*: surface, cave entrance. Not sufficiently distinctive for comparison.

GROUND STONE (43 items)

Celts (3) One miniature specimen, a larger one with sides tapering toward the flattened, extensively battered poll, and split for about two-thirds of its length (Figs. 16f,g), plus a small blade fragment. Flattened oval section. Presumably wood-cutting or splitting tools, though the miniature specimen may not be functional. *Length*: miniature 4.1 cm., larger

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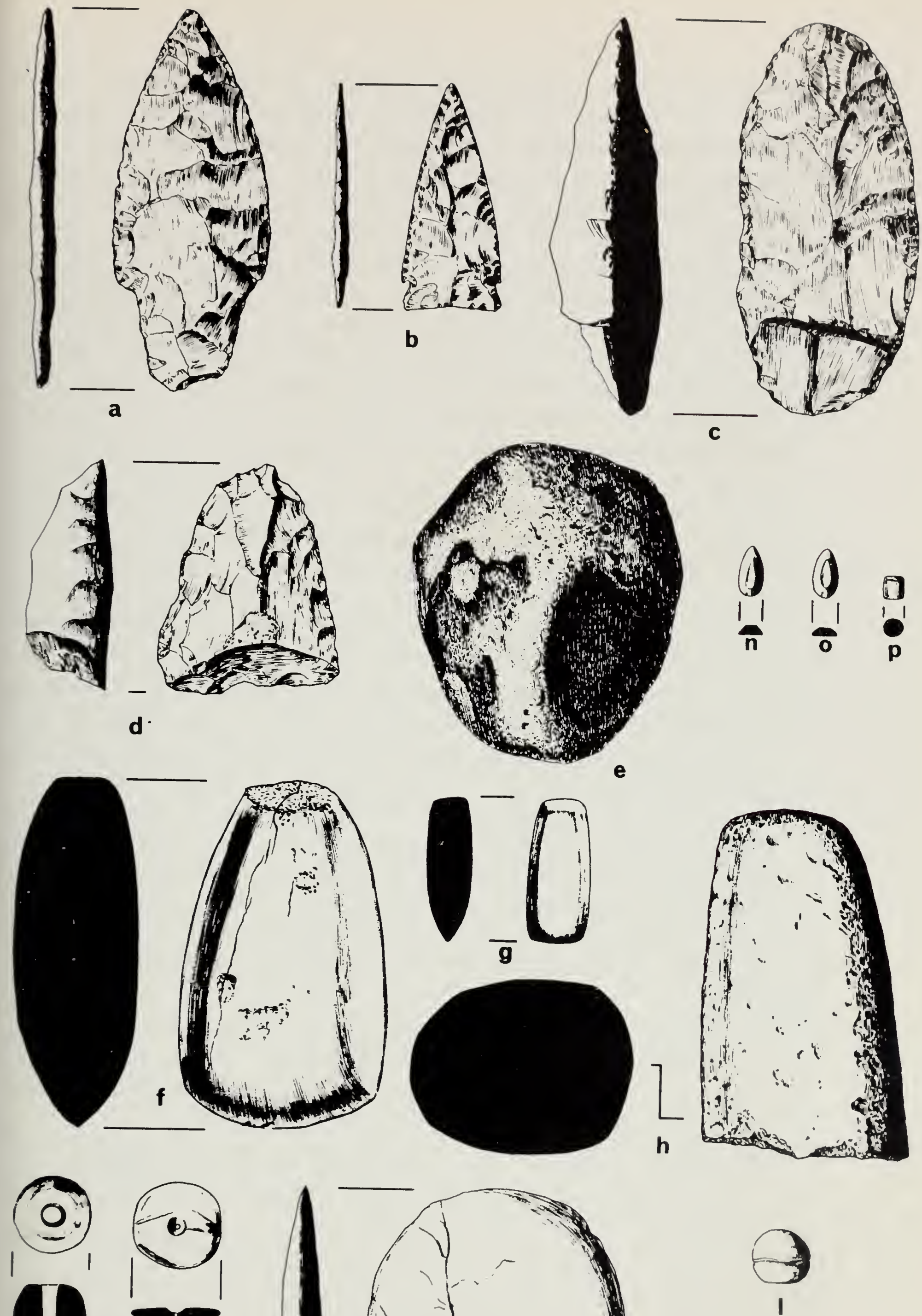
Fig. 16 Miscellaneous artifacts: stone.
a: Bifacial stemmed blade, quartzite. Projectile point or knife.
b: Bifacial corner-notched blade, chalcedony. Projectile point.
c: Bifacial heavy ovate blade, chert. Cutting or chopping tool.
d: Bifacial heavy plano-convex blade, chert. Reshaped for use as scraper (?).
e: Cobble hammerstone, quartzite.
f,g: Celts, diabase or basalt and jadeite, respectively.
h: Bifacial mano, somewhat irregular square cross-section, granite.
i: Spindle whorl, greyish limestone.
j: Disc bead, altered granite.
k: Notched disc, limestone.
l: Grooved ball, limestone.
m: Pebble, incised "wind-symbol" decoration, unidentified igneous rock.
n-p: Hematite pyriform and cylindrical inlays (?) from Chamber 6 cache.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10.0 cm.; *Width*: miniature 1.8 cm., larger 3.6 cm.; *Thickness*: miniature 1.3 cm., larger 3.6 cm. *Material*: miniature specimen is jadeïte, larger is diabase or basalt. *Provenance*: miniature specimen is from the apparent offering in Chamber 2; larger is from 30-40 cm. level, alcove off Chamber 1; fragment is from 10 cm. depth, Chamber 3. *Comparative material*: One miniature specimen is reported from Actun Balam (Pendergast, 1969, p. 53, fig. 10v), and one is also known from Barton Ramie from a Spanish Lookout (A.D. 700-1000) phase deposit (Willey *et al.*, 1965, p. 472, fig. 294d,e). Miniature celts occur in both caches and midden deposits of Early and Late Classic date at Altun Ha, and are also reported from Uaxactun, where they are predominantly Late Classic (Kidder, 1947, p. 38, fig. 78k,l). Larger celts are known from virtually all Maya sites, and in most cases appear to parallel the pattern at Barton Ramie, where the form occurs throughout the occupation span (Willey *et al.*, 1965, pp. 472-476). The Quiroz specimen, which rather closely resembles one from Actun Balam (Pendergast, 1969, fig. 10w), falls into the Small category at Barton Ramie, but is close to the average for celts at most sites. Further information on the temporal and spatial distribution of celts is provided by Coe (1959, pp. 40-42).

Metates or milling slabs (3) Rectangular to slightly irregular in outline, with rounded sides and partially flattened convex base, falling into the "turtle-backed" category. All specimens fragmentary, preventing length and width measurements as well as estimates of trough depth. No true footed metates were recovered. *Thickness*: 3.25-4.5 cm. *Material*: pinkish granite. *Provenance*: surface, 0-10 cm., and 30-40 cm. levels. *Comparative material*: Milling slabs of the "turtle-backed" form are known from virtually all excavated Maya sites. A discussion of variations in form and size, as well as possible temporal significance of some features, is presented by Willey *et al.* (1965, pp. 453-456).

Manos (9)

a. Bifacial, square cross-section (1) Approximately one-half of object, tapered at ends, with somewhat irregular section (Fig. 16h). *Length*: probably *c.* 19.5 cm; *Width*: 6.3 cm.; *Thickness*: 5.3 cm. *Material*: greyish granite. *Provenance*: 0-10 cm. level.

b. Bifacial, unshaped cobble (1) Fragment, slightly smoothed on both surfaces. No measurements possible. *Material*: unidentified igneous rock. *Provenance*: 20-30 cm. level.

c. Unifacial, square cross-section (1) One end only; tapered ends, sharply quadrangular cross-section. *Width*: 8.5 cm.; *Thickness*: 7.8 cm. *Material*: greyish granite. *Provenance*: 0-10 cm. level.

d. Unifacial, round cross-section (1) Approximately one-half of object, tapered at ends. *Length*: probably *c.* 14.2 cm.; *Diameter*: 9.1 cm. *Material*: pinkish granite. *Provenance*: Surface, Chamber 2.

e. Unifacial natural cobble (1) Fragment of ovoid cobble of apparently unmodified shape, smoothed on one surface. No measurements possible. *Material*: schist. *Provenance*: Surface, Chamber 2.

f. Unifacial unclassifiable fragments (3) *Material*: granite.

Comparative material: Varieties *a* and *c* appear to provide the best basis for comparisons, as well as being the most easily placed temporally. These squarish manos correspond to the quadrangular category at Uaxactun (Kidder, 1947, pp. 33-34, figs. 16, 77b,c), and to the Square variety at Barton Ramie (Willey *et al.*, 1965, p. 457, figs. 286 and 287), though in both of these cases wear is usually present on all four surfaces. Data from Barton Ramie indicate a late (A.D. 700-1000 or later) date for square manos (Willey *et al.*, 1965, p. 457), and a similar dating is indicated at San José (Thompson, 1939, p. 172). None of the other mano varieties represented at Quiroz is sufficiently distinctive to permit secure temporal placement or meaningful intersite comparisons.

Bark beaters (2) Rounded to slightly ovoid in outline, with grooves on both surfaces and a broad encircling groove around three sides, presumably for hafting. The better made of the two (the upper member of the cached pair) has 27 lines on one face separated by spaces of 0.2 to 0.3 cm., while on the opposing surface there are 12 lines with intervening spaces of 0.5 to 0.6 cm. The second beater has 24 lines on one face separated by 0.2-0.4 cm., with 14 on the opposite side, 0.35 to 0.5 cm. apart. (Plate 9). *Length*: 8.8 and 8.4 cm.; *Width*: 7.2 and 6.7 cm.; *Thickness*: 5.0 and 5.5 cm.; *Groove width*: 1.5 and 1.6 cm.; *Groove depth*: 0.5 and 0.6 cm. *Material*: crystalline limestone. *Provenance*: Offering 2, Chamber 1. *Comparative material*: Though bark beaters are not uncommon in Maya sites, most differ from the Quiroz specimens in having a rectangular rather than ovoid outline. A single ovoid beater possibly similar in form, if not in quality, to the Quiroz pair was encountered in a Late Classic-early Postclassic context at Barton Ramie (Willey *et al.*, 1965, p. 471, fig. 293f), while among the ovoid to rounded-outline beaters from Uaxactun is one from the surface which rather closely resembles the Quiroz specimens (Kidder, 1947, p. 38, fig. 78g). A Tepeu 3 or possibly later date seems probable for the Quiroz specimens.

Spindle whorl (1) Truncated conical form, with flat base (Fig. 16i). *Height*: 1.15 cm.; *Diameter*: 2.25 cm.; *Perforation diameter*: 0.6 cm. *Material*: greyish limestone. *Provenance*: 10-20 cm. level. *Comparative material*: A single spindle whorl of similar form is known from Actun Balam (Pendergast, 1969, pp. 53-54, fig. 10 l), but most specimens from neighbouring sites are of rounded or domed rather than truncated conical form. Kidder (1947, pp. 39-40) notes that spindle whorls appear to be generally late in the Maya area, and a date in the latter part of the Late Classic is probable for the Quiroz specimen.

Bead, disc-shaped (1) A thin, sharp-edged slightly biconvex disc, somewhat irregular in outline, with a central perforation (Fig. 16j). *Diameter*: 2.6 cm.; *Thickness*: 0.4 cm.; *Perforation diameter*: 0.4 cm. *Material*: altered granite. *Provenance*: 50-60 cm. level. Not sufficiently distinctive to permit intersite comparisons.

Beads, subglobular (5) Generally somewhat irregular in outline and profile; four specimens form a group much smaller than the remaining bead. *Diameter*: large specimen 2.2 cm., smaller 1.3 cm.; *Thickness*: larger 1.5 cm., smaller 0.85-0.9 cm.; *Perforation diameter*: larger 0.6 cm., smaller 0.2-0.4 cm. *Material*: jadeite, albitic jadeite, limestone, and quartzite with fuchsite. *Provenance*: large bead is from Chamber 2 cache; remainder are from offering in Chamber 3. Not sufficiently distinctive for comparison.

Disc, notched (1) A smoothed, elliptical object with slightly biconvex section and a sharp edge in which there are three notches (Fig. 16k). Use unknown. *Length*: 9.4 cm.; *Width*: 7.3 cm.; *Thickness*: 1.6 cm. *Material*: limestone. *Provenance*: Atop Floor 1, Chamber 1. No similar objects known from other Maya sites.

Ball, grooved (1) Well-rounded sphere, with one flat surface and a crudely cut encircling line (Fig. 16l). Use unknown. *Diameter*: 1.75 cm. *Material*: limestone. *Provenance*: 10-20 cm. level. No similar objects known from other Maya sites.

Pebble, incised (1) An unshaped flat pebble with a spiral "wind-symbol" design incised on one surface, and random shallow lines on the other (Fig. 16m). Use unknown. *Length*: 4.0 cm. *Material*: igneous rock, not specifically identified. *Provenance*: 40-50 cm. level. While "wind-symbols" occur in a number of forms and contexts, including an example among the Quiroz shell artifacts, this pebble is not sufficiently distinctive to warrant comparison.

Inlays (?) (3) Two pyriform objects with plano-convex section, polished on the plane surface, and a single unpolished short cylinder (Fig. 16n-p). The pair of pyriform objects appear to be inlays, as the reverse surfaces are not polished, and a similar use is assumed for the cylinder. Dimensions of pyriform objects: *Length*: 1.4 cm.; *Width*: 0.7 cm.; *Thickness*: 0.2 cm. Dimensions of cylinder: *Diameter*: 0.7 cm.; *Length*: 0.7 cm. *Material*: hematite. *Provenance*: Chamber 6 cache. Polished hematite inlays of various forms are known from many Maya sites, but no meaningful intersite comparisons are possible for these specimens.

Elongated stones, unmodified (13) Unworked elongated cobbles with no signs of use, but intentionally introduced into the cave, and almost certainly selected for their shape. *Length*: 5.2-15.5 cm.; *Width*: 0.6-3.4 cm. *Material*: Dolomite. *Provenance*: Surface, 0-30, 80-90 cm. levels, plus one specimen from within the wall at the rear of Chamber 1. No comparisons possible.

BONE (10 items)

Pin (1) Elongated form with spatulate tip and somewhat rounded point (Fig. 17a). Decorated with four transverse lines on the tip. A small groove cut into the side near the point may indicate some specialized use. Presumably ornamental. *Length*: 18.0 cm.; *Width*: 1.1 cm.;

Thickness: 0.4 cm. *Material*: mammal longbone; possible sources are deer, brocket, and tapir. *Provenance*: 0-10 cm. level. *Comparative material*: Decorated bone pins occur in both Early and Late Classic contexts in many Maya sites, but the simple decoration of the Quiroz specimen precludes comparison with other reported pins.

Awls (2) One nearly complete specimen retaining the epiphysis, with shaft cut away in part and ground to a point, plus a fragment of a possibly similar object. *Length*: 11.2 cm. *Material*: deer or brocket radius; fragment unidentifiable. *Provenance*: whole specimen from 0-10 cm. level; fragment from 20-30 cm. level. No meaningful comparisons possible.

Spatulate objects (2) Fragments of polished objects, possibly tools, made from mammal longbones. *Provenance*: 0-10 cm. and 20-30 cm. levels.

Beads (5) Rectangular concavo-convex sections of long bone; three with transverse grooves at ends, all centrally perforated. *Length*: 1.0-1.4 cm.; *Width*: 0.6-0.7 cm.; *Thickness*: 0.1 cm.; *Perforation diameter*: 0.1-0.15 cm. *Material*: bird(?) long bone. *Provenance*: Burial 4. Not distinctive enough for comparison.

SHELL (1279 items)

1. Original shell form largely preserved

Beads (1151)

a. Spire-lopped or ground *Oliva* (37) Varieties include spire-lopped without perforation (3), spire-ground with single perforation cut into the body (4), spire-ground with single drilled perforation in the body (26), spire-lopped with single drilled perforation in the body (3), and spire-ground with two pairs of drilled perforations in the body (1) (Fig. 17b-h). Several reports refer to *Oliva* shells thus modified as "tinklers", but actual use is a matter of conjecture. *Length*: 1.6-4.25 cm.; *Perforation diameter*: 0.2-0.4 cm. *Material*: Netted Olive, *Oliva reticularis* Lamarck. *Provenance*: Chamber 1, Cache 1 (23), Chamber 6 cache (10), surface of Chamber 3 (2), 0-10 cm. and 20-30 cm. levels of Chamber 1 deposit (1 each). *Comparative material*: Modified Olive shells are found in most Maya sites, with no apparent differentiation in method of perforation or spire removal over time. The most distinctive bead, that with two pairs of perforations, resembles very closely single specimens from Actun Balam (Pendergast, 1969, p. 55, fig. 10g) and Uaxactun (Kidder, 1947, fig. 85d4), differing only in the absence of the spire. No date can be assigned to either of the specimens, though the Actun Balam bead may fall near the end of the Late Classic.

b. Small gastropod shells, spire removed (1114) Included in this category are Olivella (1104), Nerite (8), and Marginella (2), all with the spire removed. The Olivella are spire-lopped, while the remainder are spire-ground, and the Marginella are further modified by a hole punched in the body. *Length*: Olivella 0.2-0.4 cm., Nerite 0.4-0.6 cm., Marginella 0.8-0.9 cm. *Material*: West Indian

Dwarf Olive, *Olivella nivea* Gmelin, with some White Dwarf Olive, *Olivella dealbata* Reeve; Virgin Nerite, *Neritina virginea* Linné; Marginella, *Marginella apicina* Menke. *Provenance*: Chamber 6 cache. Not sufficiently distinctive for comparison.

Pendants (?) (5)

a. Four valves of bivalves unmodified except for two perforations just below the hinge, and a fifth specimen with perforations plus notching along the ventral margin (Fig. 17i-k). Probably meant to be strung as pendants, but possibly used as beads. *Length*: 3.65-4.5 cm.; *Perforation diameter*: 0.1-0.2 cm. *Material*: Fresh-water mussel, *Nephronaias ortmanni* Frierson. *Provenance*: The four with plain margin are from the 0-20 cm. level; the dentate specimen is from the 0-10 cm. level. *Comparative material*: A specimen identical to the notched shell was recovered at Uaxactun, date not given (Kidder, 1947, fig. 86d5), and a perforated *Nephronaias* is reported from a Classic context at Baking Pot (Ricketson, 1929, plate 14s). Barton Ramie yielded eight mussel shells with one or two perforations, all apparently of Late Classic date (Willey *et al.*, 1965, pp. 504-507, fig. 309 l, m). A Late Classic date seems most probable for the Quiroz specimens.

2. Cut Shell

Beads (103)

a. Disc to rectanguloid (*c.* 66) Thin to moderately thick discs (34), ranging to rectanguloid (32), considered as a single lot because the shapes intergrade. Two discs are thick enough to approach the tubular category. *Diameter*: (discs) 0.5-0.7 cm.; *Length*: (rectanguloid) 0.4-0.6 cm.; *Width*: (rect.) 0.35-0.5 cm.; *Perforation diameter*: 0.05-0.3 cm.; *Thickness*: 0.075-0.55 cm. *Material*: *Spondylus* sp. (*americanus*?). *Provenance*: Chamber 3 offering. Not sufficiently distinctive for comparison.

b. Tabular (2) Elongated forms with rectangular section. One is perforated longitudinally, while the other has a perforation at each end, passing out through one side. Both specimens fragmentary. *Length*: (one specimen only) *c.* 3.2 cm.; *Width*: 0.5-0.9 cm.; *Thickness*: 0.3-0.5 cm.; *Perforation diameter*: 0.2-0.3 cm. *Material*: *Spondylus* sp. (*americanus*?). *Provenance*: Chamber 3 offering. Probably not distinctive time markers; the type of perforation of the second specimen has not been reported from the comparative area.

c. Circlets (35) Extremely thin, delicate circlets, identified as beads on the basis of their association with other beads in cache. *Diameter*: 0.6-1.1 cm.; *Thickness*: 0.025-0.2 cm. *Material*: probably fresh-water mussel, *Nephronaias ortmanni*. *Provenance*: Chamber 6 cache. Delicate circlets of this type are not reported from sites in the comparative area.

Discs (5) Three unperforated specimens, one with central perforation, and one decorated with two concentric circles enclosing eight circular punctations, with a central perforation (Fig. 171-p). Such discs are frequently classified as "adornos", a term implying use as inlays or costume decoration and including a great variety of forms. *Diameter*: 1.5-1.9 cm.; *Thickness*: 0.2-0.3 cm.; *Perforation diameter*: 0.15-0.2 cm. *Material*: one definitely, two probably *Strombus* sp.; two West Indian Chank, *Turbinella angulata* Solander.[1] *Provenance*: plain specimens from 0-10 cm. and 40-50 cm. levels, and from 0-10 cm. below Floor 1; perforated specimen and decorated disc from 10-20 cm. level. *Comparative material*: Perforated, undecorated discs are reported from a Mountain Cow IV context at Tzimin Kax (Thompson, 1931, p. 296, plate XLVI), from Lubaantun (Joyce, 1926, plate XXIV, fig. 4), from the Late Classic at Baking Pot (Bullard and Bullard, 1965, p. 36, fig. 17a), and from the same time period at Barton Ramie (Willey *et al.*, 1965, p. 510, fig. 310a). Plain discs are also known from the sites listed above, as well as Actun Balam (Pendergast, 1969, p. 56, fig. 10h), where they are probably of terminal Late Classic date, and San José I-II, III, and IV at San José (Thompson, 1939, pp. 190-192, 213-214, and 216-217, plates 29cl,6 and 30b2 and 5). Decorated specimens have been recovered at most of the sites which have yielded undecorated discs, but none resembles closely the specimen from Quiroz.

Pendants (3) One specimen, so badly smashed that reconstruction proved impossible, probably retained some of the original form of the shell, with a deeply scalloped edge bordered by a single incised line on the interior surface. A second, of which part is missing, consists of a large body section of shell shaped into a nearly quadrangular outline, with a large central perforation, two or possibly three small perforations near the apex, and notches around most of the perimeter (Fig. 17q). The third is a tapered spatulate object, without perforation, partly polished on the exterior; it may have been something other than a pendant, though its shape suggests suspension rather than use as an inlay (Fig. 17r). No measurements except thickness (0.6 cm.) were possible on the first specimen. Specimen 2: *Length*: 5.0 cm.; *Width*: *c.* 4.8 cm.; *Thickness*: 0.2 cm.; *Perforation diameter*: central 1.8 cm., smaller 0.25 and 0.4 cm. Specimen 3: *Length*: 3.8 cm.; *Width*: 1.2 cm.; *Thickness*: 0.3 cm. *Material*: Specimen 1 is *Spondylus* sp., probably *americanus*; 2 is possibly West Indian Chank, *Turbinella angulata* Solander; 3 is Netted Olive, *Oliva reticularis* Lamarck. *Provenance*: Specimen 1 – Chamber 3 cache; 2 – surface, Chamber 4; 3 – 30-40 cm. level, Chamber 1. *Comparative material*: The lone distinctive pendant, specimen 2, finds no direct parallels in reported collections from the comparative area, though it resembles in some respects a "horse collar" ornament from Uaxactun, date not given (Kidder, 1947, p. 63, fig. 52).

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[1] Generally published as *Xancus angulatus*, but given in revised form by Andrews (1969, pp. 16-17), following Vokes (1964).

Cut spire ornament (1) The spire of a small Helmet Shell which has been cut from the body and has the tip and spines ground away (Fig. 17s). Absence of perforations makes identification as a pendant questionable, but no other use is apparent. The spiral of the shell forms a "wind-symbol" motif similar to that on the incised pebble. *Diameter*: 5.0 cm. *Material*: probably the Flame Helmet, *Cassis flammea* Linné. *Provenance*: 0-20 cm. level. *Comparative material*: A similarly cut spire of West Indian Chank is reported from Actun Balam (Pendergast, 1969, p. 56, fig. 10m), from a probably late or terminal Late Classic context, and others are known from Baking Pot (Ricketson, 1931, plates 16c and 18). The probable date for the Actun Balam specimen may indicate the date of the Quiroz example.

Miscellaneous worked shell (11) Included in this category are one imperforate and seven perforated irregular pieces of fresh-water mussel shell, one perforated irregular segment of unidentifiable shell, the lip of a conch which has been cut from the shell body, smoothed, and pierced by three perforations along the margin (Fig. 17t), and a segment of Chank shell with one transverse and two longitudinal grooves, apparently preliminary steps in forming small sections of shell for manufacture of beads or other objects (Fig. 17u). *Perforation diameter*: mussel 0.05-0.1 cm., conch 0.3-0.4 cm. *Material*: *Nephronaias ortmanni*, unidentified, *Strombus pugilis* Linné, and *Turbinella angulata* Solander, respectively. *Provenance*: (in order) Chamber 6 cache, 30-40 cm. level of Chamber 1, surface of Chamber 2, and 0-10 cm. level, Chamber 1. None of the forms is sufficiently distinctive for comparative purposes.

POTTERY (5 items)

Whistles, figurine (2) A fragmentary specimen consists of the legs, body, and tail of what may have been a bird, with a single stop in each side of the body and an outlet between the legs; the tail serves as the mouthpiece (Fig. 17v). Certainly modelled, rather than mouldmade; unslipped, but partly burnished. Three notes can be produced by closing one or the other of the two stops, or both stops simultaneously. The second specimen is a flute-like tube with what may have been the body of an animal raised on the top, containing the whistle apparatus. The

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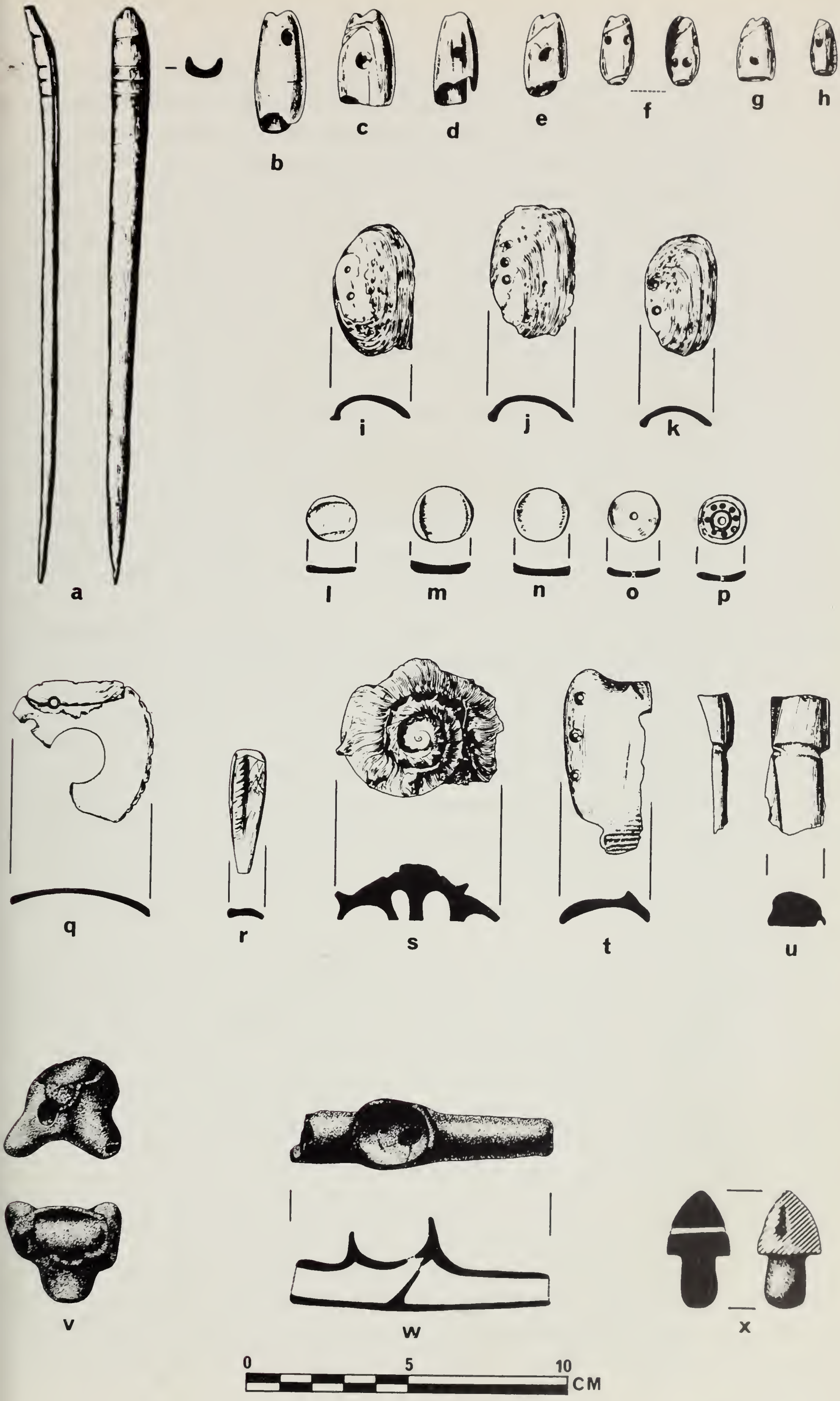
Fig. 17	Miscellaneous artifacts: bone, shell, and pottery.
a:	Pin or awl, probably deer metapodial.
b-h:	Beads or "tinklers," spire-lopped and spire-ground Netted Olive.
i-k:	Pendants, fresh-water mussel.
l-p:	Discs, conch and West Indian Chank.
q,r:	Pendants. *q* is West Indian Chank, *r* is Netted Olive.
s:	"Wind-symbol" ornament, probably Flame Helmet.
t,u:	Worked shell; West Indian Fighting Conch and West Indian Chank, respectively.
v,w:	Pottery whistles. *v* may represent a bird; *w* is a flute-like instrument with an animal (?) at the top.
x:	Problematic pottery object.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upper portion and the distal end of the tube are missing, but part of one stop is visible at the broken end of the tube, indicating that the artifact combined flute and whistle characteristics. Unslipped, with very slight burnish around stop, probably from use (Fig. 17w). Dimensions of specimen 1: *Height*: 3.05 cm.; *Width*: 3.5 cm.; *Diameter of stops*: 0.8 cm. Dimensions of specimen 2: *Length*: 8.0 cm.; *External diameter of tube*: 1.5 cm.; *Diameter of stop*: 0.5 cm. *Comparative material*: Mouldmade figurine whistles occur in many sites in the Maya area, and appear to be restricted to the Late Classic and early Postclassic in the comparative region, while modelled whistles are more widely distributed in time. Specimens which resemble the first whistle from Quiroz include a number from Uaxactun (Ricketson and Ricketson, 1937, pp. 215-217, fig. 140b,c,d, and plate 77a-c), from Pre-Classic (and later?) deposits, which have mouthpieces formed of the tail of the animal depicted. There appears to be no solid basis for dating of the Quiroz specimens by comparison with objects from other sites.

Discs, sherd (2) Both are made from unslipped jar sherds, and are unperforated. *Diameter*: 16.8 and 22.2 cm.; *Thickness*: 0.4-0.5 cm. *Provenance*: ledge above Chamber 2. Not sufficiently distinctive for comparison.

Problematic Object (1) An artifact with a tapering top decorated with grooves on the two opposing sides, and a perforation through the body at the base of the grooves. A slightly expanding, round-ended cylindrical stem extends from the flat base of the top; though unslipped, the top has a moderately high burnish, while the stem is unburnished (Fig. 17x). The absence of burnishing on the stem suggests that it may have been designed for insertion into a socket, but no use is apparent for the object. *Length*: 3.6 cm.; *Width of top*: 2.2 cm.; *Thickness of top*: 1.9 cm.; *Diameter of stem*: 1.3 cm. *Provenance*: 0-10 cm. level. No similar objects are reported from sites in the comparative area.

PIGMENT

An ovate lump of pigment was recovered from the 0-10 cm. level of the Chamber 1 deposit, apparently a chance inclusion in the fill. The sample, weighing 1.5 grams, was submitted to Anna O. Shepard of the Carnegie Institution Ceramic Technological Laboratory, Boulder, Colorado, for analysis; preliminary examination showed the pigment to be Maya Blue (Pendergast, 1964, p. 134). Analysis of the sample is to be included in a forthcoming work on Maya Blue to be published by the Carnegie Institution (Shepard, personal communication, 1969).

COMMENT: SOURCES OF RAW MATERIALS The chert used for blades and the granite favoured for manos and milling stones were in all probability collected in the area of exposed granite forming the Mountain Pine Ridge, aproximately 15 km. north of Quiroz, while the limestone and chalcedony in the collection could have come from the immediate environs of the cave. The unmodified dolomite cobbles might have had their origin in small streams within one or two kilometres of the site, though the Macal River, which forms the southern boundary of the granitic area, may be a more likely source. Obsidian was certainly imported, very probably from highland Guatemala, and a similar source is likely for the diabase or basalt of the large celt. The jadeite and related materials occurring in beads and the small celt may likewise have come from Guatemala, though there is some evidence indicating the occurrence of nephrite and related minerals in the Maya Mountains (Thompson, 1964, p. 27), some 55-60 km. southeast of Quiroz. Unfortunately, the mineralogical analyses necessary to specific determination of sources of jadeite, nephrite, and related minerals occurring at Quiroz and elsewhere have not yet been undertaken. The hematite in the Chamber 6 cache probably has a source in the Maya Mountains, perhaps considerably closer to Quiroz than the possible nephrite or jadeite outcroppings. The fresh-water mussel shells used in the manufacture of beads and pendants, as well as the unmodified fresh-water forms listed below, were probably collected either in small streams close to the cave, or no farther away at most than the Macal River. The entire range of marine shells represented among the artifacts is of Caribbean origin, assuming the *Spondylus* to be of the species *americanus*, a logical assumption in view of the occurrence of the species at Altun Ha (Pendergast, 1965b, p. 211), a possible source for marine materials encountered in inland sites such as Quiroz. The small amount of stone or other scrap recovered from the excavations indicates that little or no manufacture of artifacts was carried on in the cave, but beyond this little can be said regarding the question of whether objects made of imported materials reached the Quiroz area in finished form or as unmodified pieces to be worked up locally, though the single cut section of Chank shell suggests that the latter was true in at least some cases.

Note: All illustrations of artifacts are one-half actual size, in contrast to the one-quarter size scale of the pottery figures.

Faunal Material

FAUNAL SPECIES IDENTIFIED

The faunal material other than mollusca recovered from the cave deposit and a ledge in one chamber and presented for examination consisted of 349 specimens. Of these, 307 (88%) are of mammalian origin, 24 are avian (7%), 16 are turtle (5%), and two are amphibian. The identifications made of this faunal material and annotations regarding the occurrence and habitat preferences of the genera and species represented are shown in Appendix A.

The 307 mammalian specimens were found to include 66 representatives of 12 species, as listed below:

Common Opossum	*Didelphis marsupialis* (Linnaeus)
Four-eyed Opossum	*Philander opossum* (Linnaeus)
Jamaican Fruit-eating Bat	*Artibeus jamaicensis* (Leach)
Nine-banded Armadillo	*Dasypus novemcinctus* (Linnaeus)
Forest Rabbit	*Sylvilagus brasiliensis* (Linnaeus)
Big-eared Climbing Rat	*Ototylomys phyllotis* (Merriam)
Hispid Cotton Rat	*Sigmodon hispidus* (Say and Ord)
Paca	*Agouti paca* (Linnaeus)
Coati	*Nasua narica* (Linnaeus)
Baird's Tapir	*Tapirus bairdii* (Gill)
White-tailed Deer	*Odocoileus virginianus* (Zimmerman)
Red Brocket	*Mazama americana* (Erxleben)

The remaining 241 bones or fragments thereof were placed in broader taxonomic groups (subfamilies to order), or designated as from large, large or medium-sized, medium-sized, or small mammal species. *Large* mammal species in this area of British Honduras might be expected to include white-tailed deer, red brocket, tapir, jaguar, and cougar. *Medium-sized* species here could include opossums, forest rabbit, anteaters, armadillos, paca, agouti, skunks, otter, raccoon, coati, the smaller felids, and peccaries. *Small* species would be bats, mice, rats, squirrels, etc. Appendix B shows the identifications grouped as above, together with assessment of the number and approximate age groups of the individuals represented.

The 24 avian elements were found to include six representatives from the following three species:

Black-throated Bobwhite	*Colinus nigrogularis* (Gould)
Common Gallinule	*Gallinula chloropus* (Linnaeus)
Barn Owl	*Tyto alba* (Scopoli)

Evidence in support of the presence of the Crested Guan (*Penelope purpurascens*) and the Black Rail (*Laterallus jamaicensis*) or Ruddy Crake (*L. ruber*) was noted, but lack of reference material made their identification uncertain. The remaining 15 specimens could be identified only to subfamily, family, or order, or as avian bone fragments (Appendix B).

Table 2 is provided as an aid in visualizing the relative positions of the faunal material in various levels of the excavation. Faunal species were grouped, *e.g.*, the Red Brocket and White-tailed Deer as deer, the mice, rats and squirrels as rodents, etc., to conserve space.

ARCHAEOLOGICAL ASPECTS OF THE FAUNAL FINDINGS

Faunal Food Resources

Of the fauna represented in the cave, brocket, white-tailed deer, paca and/or agouti and forest rabbit are the most likely food items. The armadillos, opossums, and raccoon family representatives might have entered the cave themselves and died a natural death there, or may have been carried in as food. Very unlikely as food species, and frequently troglodytic, are the skunks, bats, and mouse and rat species. Tapir meat is regarded by present-day Mayas with varying degrees of relish and distaste (E. Pendergast, personal communication), and its culinary use during the Maya Classic period appears uncertain.

Avian food species are suggested to be the Black-throated Bobwhite, Crested Guan and Common Gallinule, which would provide small to moderate amounts of useful meat. The Barn Owl is a frequent cave inhabitant and possibly a food item, while the size of the swallow and sparrow species would make them of little culinary value. An egret or heron upper mandible tip among the vessels on the ledge above Chamber 2 is suggested to have had a non-dietary use.

The 16 turtle elements, identified by Dr. John M. Legler (Department of Zoology, University of Utah) as *Kinosternon* sp., consist of 11 carapace portions and five fragments from plastron or carapace. The absence of any excavated turtle bones suggests that the shell alone was brought to the cave, and as other than a food item. Kinosternon ("schwanka") turtles are not regarded as edible by the modern inhabitants of British Honduras. The two small toad or frog leg bones are of uncertain significance.

Inspection of the remains of species likely to have been used as food showed only a single fragment with evidence of charring or scorching. The grey surface colour of the deer or brocket awl and the agouti or paca innominate bone from Pit 12 and of the brocket antler tine from Pit 6 is believed to have been acquired from their surroundings (ash?), rather than by calcination of these elements themselves. An absence of butchering marks on the bones of species commonly used for food was noted.

Seasonality

The season of acquisition of the White-tailed Deer bone material is suggested by Murie's note (1935) of the observation by the people of the Mountain Pine Ridge that "during the dry season [December to June approximately] the deer move to the *bajos* [low lands], and that during the rainy season [June to October approximately] when the *bajos* are flooded, they move to higher ground." The upland location of Eduardo Quiroz Cave may suggest that the White-tailed Deer might be more readily available in its neighbourhood between June and October.

The antlers from the two or more Red Brockets represented in the cave material appear to have been shed naturally. They are not likely to be

TABLE 2 Faunal Profile of Chamber 1, Eduardo Quiroz Cave

	Pit 1	Pit 6	Pit 7	Pit 8	Pit 9	Pit 10	Pit 11	Pit 12
Loose Surface Soil 4 cm.	—LEVEL OF COMPACT FILL—		Lot 75 M. 1 Deer(1) T. 5 6 Total					
0-10 cm.	Lot 52 M. 52 Rabbit(1) Bat(1) Rodents(38) A. 2 Bobwhite(1) Perching Bird(1) 54 Total	Lot 71 M. 3 Deer(3) T. 1 4 Total FLOOR	Lot 77 M. 18 Deer(10) Tapir(1) Rodents(2) A. 1 Bobwhite(1) T. 1 20 Total		Lot 91 M. 15 Deer(6) Rabbit(1) Raccoons(2) A. 2 Guan(1) T. 4 Un. 1 22 Total	Lot 98 (floor) M. 1 Opossum(1) 1 Total	Lot 112 M. 8 Deer(1) Bats(2) Rodents(4) A. 1 T. 1 Un. 1 11 Total	Lot 114 M. 8 Deer(1) Paca(2) 8 Total
10-20 cm.			Lot 79 M. 47 Coati(1) Deer(1) Bats(8) Rodents(22) A. 3 Bobwhite(1) Rails(2) Am. 2 52 Total		Lot 93 M. 35 Deer(8) Bats(2) Opossum(1) Rodents(3) Armadillo(1) A. 2 Gallinule(1) T. 2 Swallow(1) 39 Total	Lot 99 M. 5 Rabbits(2) Bat(1) 5 Total		
20-30 cm.		Lot 76 M. 1 Deer(1) 1 Total		Lot 84 M. 5 Tapir(1) Deer(1) 5 Total		Lot 103 M. 10 Rabbits(2) Armadillo(1) Bat(1) Rodents(2) 10 Total		
30-40 cm.				Lot 88 M. 24 Deer(1) Skunk(1) Bat(1) Rodents(11) A. 1 Swallow		Lot 104 M. 18 Tapirs(2) Bats(2) Rabbits(2) Skunk(1) Rodents(3)		

40-50 cm.			Rodents(3) A. 1 6 Total	1 Total			1 Total		1 Total
50-60 cm.			Lot 87 (vessel) M. 11 Opossum(1) Rodents(10) A. 1 12 Total						
60-70 cm.			Lot 92 M. 3 Armadillo(3) 3 Total				Lot 121 A.5		
70-80 cm.			Lot 94 M. 27 Armadillo(19) Raccoons(2) Rodents(4) A. 1 Sparrow(1) 28 Total					CLASSES OF FAUNA M. : Mammalian A. : Avian T. : Turtle (Reptilian) Am. : Amphibian Un. : Class Unidentified	
80+ cm.								Bracketed Numbers are the numbers of faunal findings (bones, scutes, teeth, etc.) assigned to a group of species. H.G.S.	

useful in determining the season of their acquisition because of the possibility of their transfer to the cave by the Maya at any time of the year.

The presence of antlers from both the Red Brocket and White-tailed Deer in the faunal material makes it highly likely that both species are represented in the ten cervid bones recovered. However, lack of brocket post-cranial material makes the number of deer bones uncertain, and conclusions regarding the possibility of seasonal occupation of the cave open to question.

Faunal Element Artifacts

Avian bone artifacts recovered from the cave consist of the five drilled sections of extremity bone which formed the bracelet accompanying Burial 4. Artifacts made from mammalian extremity bones are the well-executed pin from Pit 7, the awl of deer or brocket radius from Pit 12, the smoothed object from Pit 8, and the curved plate from pits 7 and 9. The brocket antler tine from Pit 6 had the same surface appearance as the awl from the same level of Pit 12, and would have made an excellent awl; however, surface evidence of such a possible use had been destroyed by erosion.

Possible Ceremonial Use of Avian Species

A review of the 14 avian bones shown in Appendix B which could be assigned to a left or right position in a bird showed an unusually structured distribution. Eleven wing or leg bones are from the left side, while only three such bones are from the right side of the birds represented. The statistical probability that such an 11 : 3 ratio between left and right bones would occur due to chance alone was calculated as 2.5 to 5 times out of 100. A chi-square test for goodness of fit of the observed frequencies of left and right bones was found to be significant ($0.025 < P < 0.05$). Conversely, the likelihood that some selection of the wing and leg bones had occurred is 95 to 97.5 out of 100. Inspection of the extremity long bones of the various mammal groups did not show any significant difference in the distribution of right and left elements.

Factors which could influence the recovery of the avian bones are the carrying off of bone refuse from the cave by rodents and other fauna, the disintegration of fragile bird bones since the Maya Classic period, and the loss of small bones during excavation. Similarly, rodents, procyonids or skunks might have brought into the cave wing or leg elements for consumption of their fleshy portions. However, all such factors would operate without regard for the left or right anatomical position of the bones involved. The ratio of left to right bones suggests some special attitude toward left wing and leg bird portions in Maya culinary or ceremonial practices: that there had been human selection of bird portions, possibly as a result of special significance accorded left wing and leg structures in ritual proceedings due to their being on the same side as the mammalian heart.

Uneven Distribution of Mammalian Skeletal Elements

Reference to Appendix B shows a puzzling and uneven distribution of the skeletal elements of certain species. The opossum species are represented only by two mandibles, a scapula, and two vertebrae, the procyonids by a tooth, scapula and calcaneus, and the tapir by a rib, patella, and foot bones. Even the more numerous deer and/or brocket bones consist of only two patellae, a metapodial bone, calcaneus, toe bone and mandible. By contrast, the small mammal species including bats, mice and rats, presumably cave inhabitants, have many representatives of most of the extremity long bones. The mammalian bone portions and fragments which were identified only as from large species (8 specimens), from large or medium-sized species (21 specimens) and from medium-sized species (29 specimens) are not thought to include many of the missing skeletal elements. Possible explanations of the scanty and often unrelated skeletal elements of the large and medium-sized mammal species are that only portions of these animals were brought to the cave, or that some food or ceremonial refuse was disposed of elsewhere than within the cave, though such a deposit has not yet come to light.

ZOOLOGICAL ASPECTS OF THE FAUNAL FINDINGS

Distribution of Subadult Rodent Extremity Long Bones

A matter of interest among the mouse and rat elements in the excavated material is the high percentage of subadult individuals (91%) as judged by the absence of extremity long bone epiphyses. Of the 82 small rodent extremity long bones, 75 such bones are without one or both epiphyses, while only seven are of adult appearance. All of the subadult bones appear to be at much the same stage of development, *i.e.*, without epiphyses but nearly half as large as the adult representatives. In distribution, over one-half (38) of the immature bones were found in the uppermost level (0-10 cm.) of Chamber 1; no adult bones were present in this level.

Several possible explanations may be offered for this concentration of subadult bones in the uppermost level of the deposit. The excavated Barn Owl femur indicates the presence of this rodent predator within or in the vicinity of the cave; its habit of regurgitating food pellets at its nesting or roosting places (Bent, 1938) is well known. The presence of only immature rodent bones in the top level may be related to the lesser degree of wariness for predators among young individuals, and to the large litters of many rodents (2-12 for the Hispid Cotton Rat; Hall and Kelson, 1959).

Less likely explanations of the numerous subadult rodent bones are other environmental factors, *e.g.*, starvation, dehydration, toxic substances or disease during the latter period of use of the cave, which could bring about the death of numbers of young individuals.

Records of Avian Species in the Vicinity of Eduardo Quiroz Cave

The recording of three avian species, the Barn Owl (*Tyto alba*), the Common Gallinule (*Gallinula chloropus*) and the Black-throated Bobwhite (*Colinus nigrogularis*) in the Maya Mountains of British Honduras during the period approximating A.D. 250-A.D. 900 is worthy of note. Of these, only the Black-throated Bobwhite has previously been recorded archaeologically in the area (Pendergast, 1969, p. 57). It seems likely that at least five more species will be identified when appropriate reference material is available.

The Barn Owl has been known in British Honduras only from four sightings reported by Russell (1964) at Cayo (now San Ignacio) about 48 km. north of Eduardo Quiroz Cave, at Middlesex, a similar distance east of the cave, and at Gallon Jug, near the Guatemalan border. The excellent specimen of a Barn Owl femur recovered from beneath the plaster floor in Chamber 1 is here reported as the first specimen evidence, archaeologically or otherwise, of this species in British Honduras.

Similarly, the Common Gallinule was reported on six occasions during 1956-1958 by Russell, at Gallon Jug and at Stann Creek, near the coast. The first specimens (3) were collected in 1966 by Baldwin near Rockstone Pond in northern British Honduras (Barlow *et al.*, 1969). The two Common Gallinule humeri from Eduardo Quiroz Cave are however the first evidence of the presence of this species in British Honduras during the Classic period of its prehistory.

Avian Habitats in Relation to the Site

Suitable habitat for Common Gallinules, *i.e.*, freshwater marshes usually with a small area of open water (Godfrey, 1966), is not presently to be found within 60 km. of Eduardo Quiroz Cave, the closest possible location being in the lowlands between the Maya Mountains and the seacoast. The Black-throated Bobwhite is noted by Russell (1964) as occurring only in pinelands at low elevations along the coast or about inland lagoons. The upland location of the cave places it at least 60 km. from any area with this sort of habitat. The heron or egret upper mandible portion from the ledge above Chamber 2 has as its possible avian sources the Reddish or Snowy Egret or the Louisiana Heron. The latter two species occur usually in marshy or swamp areas or on river, pond, and lagoon borders, and the Reddish Egret on offshore cays, none of which areas is closer to the cave than 65 km.

The distances of suitable habitats for all of the above avian species from the cave suggests a lengthy transportation of these birds or portions thereof by the Maya. The Barn Owl, a known predator in the vicinity of the cave, is not at all likely to have chosen these species as prey (Bent, 1938) and to have brought them to the cave. Significant differences in geographical features and vegetation, apart from those due to agricultural practices, which would have produced habitats as described above in the vicinity of the cave during the Classic period are not indicated by any archaeological evidence. That the Maya brought portions of at least gallinules, bobwhites and egret or heron or their bones to the cave from a considerable distance indicates their desirability as food or for ceremonial purposes.

CONCLUSIONS

Correlation of the archaeological and faunal findings from this rather small and well-delimited site of the Classic period of Maya prehistory has provided information about the food resources and bone tools and ornaments of the Maya in its vicinity, and suggested use of the cave during at least the period from June to October. A high probability of differential (ritual?) treatment of left and right avian portions is reported.

The identification of skeletal elements of three avian species in the occupation deposit in the cave provides specimen evidence of these species in British Honduras during some portion of the Maya Classic period (A.D. 250-900). The Barn Owl material is believed to be the first such evidence reported, and the Common Gallinule bones are the second examples for this species. Consideration of known habitats for identified species indicates transportation of avian species to the cave from considerable distances.

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APPENDIX A

DISTRIBUTION OF FAUNAL MATERIAL BY EXCAVATION UNIT

Lot 6: *Ledge above Chamber 2*

1. Egret or Heron sp. *Ardeinae* sp.[1] (Upper mandible.)
   Tip portion present. Specimen fits well Snowy Egret (*Leucophoyx thula*) and Louisiana Heron (*Hydranassa tricolor*). No reference material for the Reddish Egret (*Dichromanassa rufescens*).
2. Rodent sp., small. *Rodentia* sp. (Left innominate bone.)

Lot 14: *Loose surface soil of Alcove in Chamber 6*

1. Skunk sp. *Mustelidae* sp. (Right lower 1st molar.)
   Similar to *Spilogale* sp., but no *S. angustifrons* reference material available.

Lot 52: *Pit 1, Chamber 1, 0-20 cm.*

1. to 13. Mouse sp. *Cricetinae* sp. (Right femur.)
   Capital, trochanteric and distal epiphyses absent; subadult individuals.

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[1] The *Snowy Egret* is noted by Russell (1964) as inhabiting river, pond and lagoon borders, mangrove swamps, and to a lesser extent beaches, while the *Louisiana Heron* occurs in suitable wet places on both the islands and mainland. The one record of the *Reddish Egret* in British Honduras in 1957, reported by Russell, has been supplemented by recent sightings of this species on Ambergris and Tobacco Cays (E. Pendergast, pers. comm.).

14. to 22. Mouse sp. *Cricetinae* sp. (Left femur.)
Capital, trochanteric and distal epiphyses absent; subadult individuals.

23. to 27. Mouse sp. *Myomorpha* sp. (Right tibia.)
Proximal epiphysis absent; subadult individuals.

28. to 31. Mouse sp. *Myomorpha* sp. (Left tibia.)
Proximal epiphysis absent; subadult individuals.

32. Rodent sp., small. *Rodentia* sp. (Left innominate bone.)
Pubis missing.

33. Rodent sp., small. *Rodentia* sp. (Right innominate bone.)
Pubis missing.

34. Perching bird sp. *Passeriformes* sp. (Right humerus.)
Distal ¾ only present.

35. to 37. Rodent sp., small. *Rodentia* sp. (Left humerus.)
Proximal epiphysis absent; subadult individuals.

38. Rodent sp., small. *Rodentia* sp. (Right humerus.)
Proximal epiphysis absent; subadult individual.

39. Bat sp., small. *Microchiroptera* sp. (Left radius.)
Proximal ¾.

40. Big-eared Climbing Rat. *Ototylomys phyllotis.*[2] (Mandible.)
Right half, with 2nd premolar.

41. Forest Rabbit. *Sylvilagus brasiliensis.*[3] (Right radius.)
Distal epiphysis; subadult individual.

42. Mammal sp., small. *Mammalia* sp. (Left femur.)
Capital and trochanteric epiphyses absent; cortex appears juvenile.

43. Black-throated Bobwhite. *Colinus nigrogularis.*[4] (Left tibia.)
Shaft portion only present.

44. to 54. Mammal sp. *Mammalia* sp. (Bone.)
Fragments only.

Lot 54: *Pit 2, Chamber 2, 0-3 cm.*

1. Bat sp., large. *Microchiroptera* sp. (Left radius.)
Radius length 57.8 mm.; this measurement indicates this specimen to be from one of the larger species; e.g. *Chilonycteris*, *Trachops*, *Artibeus*, *Desmondus*, *Diphylla*, *Tadarida*, and *Eumops*, having forearm lengths of 55-70 mm., and recorded from British Honduras (Hall and Kelson, pp. 89-214).

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[2] Goodwin (1946) comments that *Ototylomys phyllotis* is a forest-loving, tree-climbing rat, appearing to have an altitudinal range from near sea level to at least 6,000 feet. Burt and Stirton (1961) describe its habitat as rocky cliffs, mine tunnels and forests, where it is partially arboreal.

[3] This specimen, as a typical *Sylvilagus sp.* radius has been assigned to the Forest Rabbit (*S. brasiliensis*), since this species is the only member of its genus to be recorded in British Honduras. Hall and Kelson (p. 255) note: "These rabbits rest in forests or other thick vegetal cover and do not venture far from such cover to feed."

[4] Re the Black-throated Bobwhite, Russell comments: "The species is a moderately common resident of lowland pine ridges from the vicinity of Hill Bank south to Ycacos Lagoon. A mixture of oak, pine, and palmetto overgrown with high grasses provides its preferred habitat." Also, Russell lists *Colinus nigrogularis* as occurring only in pinelands at low elevations. (pp. 55 and 189).

Lot 57: *Pit 3, Chamber 3, 0-5 cm.*

1. Mammal sp., large-medium-sized. *Mammalia* sp. (Extremity bone.) Shaft, portion.

Lot 71: *Pit 6, Chamber 1, 0-4 cm.*

1. Turtle sp. *Kinosternon* sp. (Carapace.)
   Costal plate.
2. Red Brocket. *Mazama americana.*[5] (Antler tine.)
   Tip portion, with rounded point. Surface has a pale orange exterior surface film, lost in many areas, with the underlying antler unchanged in colour, except basally where a dull gray superficial discolouration is present. Surface appearance is very similar to Spec. 1, Lot 114. Fits Spec. 4 below.
3. Red Brocket. *Mazama americana.* (Antler base.)
   Fragment with burr; base is bevelled inward, and has a fine network appearance, as of a shed antler. Surface appearance as for Spec. 2 above. Fits with Spec. 4 below.
4. Red Brocket. *Mazama americana.* (Antler base.)
   Portion with burr. Fits Specs. 2 and 3 above, with the same surface appearance. Specs. 2, 3 and 4, when fitted together make an excellent awl; however patchy loss of their surfaces prevents such an identification.

Lot 75: *Pit 7, Chamber 1, 0-4 cm.*

1. Red Brocket or White-tailed Deer. *Mazama americana* or *Odocoileus virginianus.*[6] (Right patella.)
   Small specimen, probably from a Brocket. See foot-note 5.
2. Turtle sp. *Kinosternon* sp. (Carapace.)
   Costal plate.
3. Turtle sp. *Kinosternon* sp. (Shell.)
   Fragment.
4. Turtle sp. *Kinosternon* sp. (Shell.)
   Fragment.
5. Turtle sp. *Kinosternon* sp. (Carapace.)
   Costal plate.
6. Turtle Sp. *Kinosternon* sp. (Carapace.)
   Marginal plate.

Lot 76: *Pit 6, Chamber 1, 20-30 cm.*

1. Red Brocket or White-tailed Deer. (Metapodial bone.)
   Distal condyle epiphysis; from subadult individual. See foot-notes 5 and 6.

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[5] The Red Brocket (*Mazama americana*) is noted by Walker (p. 1398) as normally inhabiting wooded tropical areas and forested hillsides near running water from sea level to elevations of 5,000 meters.

[6] The *White-tailed Deer* habitat is described by Hall and Kelson (p. 1007) as woodlands, forest edges and thickets along streams, the deer seemingly avoiding dense stands of conifers or extensive open spaces.

Lot 77: *Pit 7, Chamber 1, 0-10 cm.*

3. Black-throated Bobwhite. *Colinus nigrogularis.* (Left tibia.) See foot-note 4.
4. White-tailed Deer. *Odocoileus virginianus.* (Antler tine.) Portion. See foot-note 6. Fits Spec. 5, Lot 91.
5. Red Brocket or White-tailed Deer. (Antler tine.) Portion. See foot-notes 5 and 6.
6. Red Brocket or White-tailed Deer. (Antler tine.) Fragment. See foot-notes as above.
7. Red Brocket or White-tailed Deer. (Antler tine.) Portion. See foot-notes as above.
8. Red Brocket or White-tailed Deer. (Antler tine.) Portion. See foot-notes as above.
9. to 12. Red Brocket or White-tailed Deer. (Antler tine.) Fragment. See foot-notes as above.
13. Baird's Tapir. *Tapirus bairdii.*[7] (Patella.) See foot-note 7.
14. Mammal sp., large-medium-sized. *Mammalia* sp. (Extremity bone.) Shaft, fragment; slightly calcined on outer surface, and charred on medullary surface.
15. Rodent sp., small. *Rodentia* sp. (Sacrum.) Sacral segments fused, but proximal epiphysis absent; subadult.
16. Mouse sp. *Cricetinae* sp. (Left femur.) Distal epiphysis; surface glossy and shiny; from subadult individual.
17. White-tailed Deer. (Metapodial bone.) Proximal end, anterior surface; fragment. See foot-notes 5 and 6.
18. Mammal sp., large-medium-sized. *Mammalia* sp. (Bone.) Fragment.
19. Mammal sp., medium-sized. *Mammalia* sp. (Left femur.) Shaft portion, without capital, trochanteric or distal epiphyses; from subadult individual.
20. Turtle sp. *Kinosternon* sp. (Carapace.) Marginal plate.
21. Mammal sp., large-medium-sized. *Mammalia* sp. (Bone.) Fragment, with fairly smooth, polished surface and rounded edges, as an artifact. Fits with Spec. 6, Lot 91.
22. Mammal sp., large. *Mammalia* sp. (Extremity bone.) Shaft portion. Long slender artifact, of full thickness of cortex, tapering gradually to a sharp point at one end, and to a rounded blunt opposite end; 4 transverse, approximately parallel grooves are present near this latter end. Suggests a pin or tool for fine work.

Lot 79: *Pit 7, Chamber 1, 10-30 cm.*

1. Coati. *Nasua narica.*[8] (Left upper canine tooth.)

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[7] Hall and Kelson, p. 993, observe that *Tapirs* "frequent swamps or watercourses, eat aquatic vegetation and browse on forest foliage."

[8] *Coatis* are noted by Walker (p. 1183) as usually found in wooded areas, foraging in trees and on the ground, and with dens in rocky locations.

Mesial surface shows a little wear only. Unique root shape noted; identification aided by X-ray.

2. Red Brocket. *Mazama americana.* (Antler base.)
   Base encircled by a burr, slanted and with a fine network appearance, as when shed. See foot-note 6.
3. Mammal sp., large. *Mammalia* sp. (Rib.)
   Lateral surface of shaft; portion.
4. Mammal sp., large. *Mammalia* sp. (Rib.)
   Medial surface of shaft; portion.
5. Mammal sp., medium-sized. *Mammalia* sp. (Extremity bone.)
   Shaft, fragment.
6. Jamaican Fruit-eating Bat. *Artibeus jamaicensis.*[9] (Skull rostrum.)
   Left upper 4th premolar present and quite worn.
7. Black Rail or Ruddy Crake ? *Rallinae* sp.[10] (Left humerus.)
   See foot-note 10.
8. Black Rail or Ruddy Crake ? *Rallinae* sp. (Left coracoid.)
   Distal ⅔. See foot-note 10.
9. Bat sp., large. *Microchiroptera* sp. (Right radius.)
   Proximal ⅔.
10. Black-throated Bobwhite. *Colinus nigrogularis.* (Left tibia.)
    Distal third. See foot-note 4.
11. American Leaf-nosed Bat sp., large. *Phyllostomidae* sp. (Left humerus.)
    Specimen in good condition. Large species of *Phyllostomidae*, recorded in British Honduras, include those of the genera *Trachops*, *Chropterus* and *Artibeus.*
12. American Leaf-nosed Bat sp., large. *Phyllostomidae* sp. (Left humerus.)
    Specimen in good condition. Large species of *Phyllostomidae*, recorded in British Honduras, include those of the genera *Trachops*, *Chropterus* and *Artibeus.*
13. American Leaf-nosed Bat sp., large. *Phyllostomidae* sp. (Right humerus.)
    Proximal ¾. Note as above.
14. American Leaf-nosed Bat sp., small. *Phyllostomidae* sp. (Right humerus.)
    Small species of *Phyllostomidae*, recorded in British Honduras, i.e. having a forearm length less than 55 mms., include those of the genera *Chilonycteris*, *Pteronotus*, *Mormoops*, *Micronycteris*, *Lonchorhina*, *Tonatia*, *Glossophaga*, *Anoura*, *Carollia*, *Sturnira*, *Uroderma*, *Chiroderma*, *Artibeus*, *Enchisthenes*, *Pygoderma*, and *Centurio.*
15. American Leaf-nosed Bat sp., small. *Phyllostomidae* sp. (Left humerus.)
    Small species of *Phyllostomidae*, recorded in British Honduras, i.e.

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[9] The *Jamaican Fruit-eating Bat* is noted by Hall and Kelson (p. 137) as "one of the commonest fruit bats throughout its geographic range. It lives in caves when possible but does not refuse crevices in trees when preferred sites are wanting."

[10] Specimens 7 and 8 were found to be from a rail species, much smaller than the Sora Rail (*Porzana carolina*). The Black Rail (*Laterallus jamaicensis*) and the Ruddy Crake (*L. ruber*) are the only British Honduras species of the subfamily *Rallinae* fitting this description, but no *Laterallus* skeletal material is at hand. Hence only a questionable identification was made. Both Laterallus species are seen in grassy habitats (Russell, p. 58-59).

having a forearm length less than 55 mms., include those of the genera *Chilonycteris*, *Pteronotus*, *Mormoops*, *Micronycteris*, *Lonchorhina*, *Tonatia*, *Glossophaga*, *Anoura*, *Carollia*, *Sturnira*, *Uroderma*, *Chiroderma*, *Artibeus*, *Enchisthenes*, *Pygoderma*, and *Centurio*.

16. Frog or Toad sp., small. (Left humerus.)
    Distal ⅔.
17. Frog or Toad sp., medium-sized. (Tibio-fibula.)
    Major shaft portion.
18. Mouse sp. *Cricetinae* sp. (Right femur.)
    Adult, by fused epiphyses.
19. to 24. Mouse sp. *Cricetinae* sp. (Right femur.)
    Capital, trochanteric and distal epiphyses absent; from subadult individuals.
25. Mouse sp. *Cricetinae* sp. (Left femur.)
    Capital, trochanteric and distal epiphyses absent; from subadult individuals.
26. Mouse sp. *Cricetinae* sp. (Left femur.)
    Capital, trochanteric and distal epiphyses absent; from subadult individuals.
27. Rodent sp., small. (Right femur.)
    Proximal ¾; capital and trochanteric epiphyses present.
28. to 31. Mouse sp. *Myomorpha* sp. (Right tibia.)
    Proximal epiphysis absent; from subadult individuals.
32. to 34. Rodent small. *Rodentia* sp. (Left humerus.)
    Proximal epiphysis absent; from subadult individuals.
35. Rodent sp., small. *Rodentia* sp. (Right humerus.)
    Proximal epiphysis absent; subadult individual.
36. Rodent sp., small. *Rodentia* sp. (Right humerus.)
    Proximal epiphysis absent; subadult individual.
37. Rodent sp., small. *Rodentia* sp. (Left innominate bone.)
    Pubis missing; no acetabular epiphysial line.
38. Rodent sp., small. *Rodentia* sp. (Right innominate bone.)
    Pubis missing; no acetabular epiphysial line.
39. Mammal sp., small. *Mammalia* sp. (Metapodial bone.)
    Epiphysis fused.
40. Rodent sp., small. *Rodentia* sp. (Right ulna.)
    Proximal ⅔ present; no olecranon epiphysial line.
41. Bat sp., large. *Microchiroptera* sp. (Ulna.)
    Specimen almost complete; length 16 mms.
42. to 52. Mammal sp., small. *Mammalia* sp. (Bone.)
    Fragments.

Lot 81: *Pit 7, Chamber 1, 40-50 cm.*

1. Avian sp., large to medium-sized. (Extremity bone.) Shaft, fragment.
2. Forest Rabbit. *Sylvilagus brasiliensis*. (Mandible, right half.)
   Anterior portion, with 4th premolar and 1st and 2nd molars. See footnote 3.

3. Mouse sp. *Cricetinae* sp. (Left femur.)
   Capital, trochanteric and distal epiphyses absent; subadult.
4. Mouse sp. *Cricetinae* sp. (Right femur.)
   Capital, trochanteric and distal epiphyses absent; subadult.
5. Mouse sp. *Cricetinae* sp. (Right femur.)
   Capital, trochanteric and distal epiphyses absent; subadult.
6. Mammal sp., large to medium-sized. (Bone.)
   Fragment.

Lot 84: *Pit 8, Chamber 1, 20-30 cm.*

1. Red Brocket or White-tailed Deer. *Mazama americana* or *Odocoileus virginianus.* (Right calcaneus.)
   Small specimen.
2. Baird's Tapir. *Tapirus bairdii.* (Right 2nd metacarpal bone.)
   Distal end, fragment; fits Lot 127, Spec. 1. See foot-note 7.
3. Mammal sp., large. *Mammalia* sp. (Extremity bone.)
   Shaft, portion; 2 fitted pieces. Outer curved surface and both borders smoothed and polished, as an artifact (possible scraper). Prob. fits 4. below, but edge of artifact shows recent loss.
4. Mammal sp., large. *Mammalia* sp. (Extremity bone.)
   Shaft, fragment. Outer surface and 1 border smoothed and rounded, as an artifact. Prob. fits 3. above.
5. Mammal sp., medium-sized. *Mammalia* sp. (Extremity bone.)
   Shaft, portion; cortex appears juvenile.

Lot 87: *Pit 7, Chamber 1, material from vessel rim, depth 48 cm.*

1. Four-eyed Opossum. *Philander opossum.*[11] (Mandible, right half.)
   2nd premolar present.
2. Big-eared Climbing Rat. *Ototylomys phyllotis.* (Mandible, right half.)
   Incisor and 3 molars present. See foot-note 2.
3. Big-eared Climbing Rat. *Ototylomys phyllotis.* (Mandible, left half.)
   2nd and 3rd molars present.
4. Squirrel sp., small. *Sciuridae* sp. (Mandible, left half.)
   Incisor present. Alveolar sockets for 1 premolar and 3 molars, the morphology and size of this specimen indicates a squirrel sp., smaller than Deppe's Squirrel (*Sciurus deppei*); for further examination.
6. Mouse sp. *Cricetinae* sp. (Left femur.)
   Proximal ⅔; adult by fused epiphyses.
7. Mouse sp. *Cricetinae* sp. (Left femur.)
   Proximal ⅔; adult by fused epiphyses.
8. Mouse sp. *Myomorpha* sp. (Right tibia.)
   Proximal epiphysis absent; subadult.
9. Mouse sp. *Myomorpha* sp. (Right tibia.)
   Proximal epiphysis absent; subadult.

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[11] Re the *Four-eyed Opossum*, Walker (p. 21) comments, "These opossums inhabit forested areas and are found near swamps and rivers."

10. Rodent sp., small. *Rodentia* sp. (Right humerus.)
Adult, by fused epiphyses.
11. Rodent sp., small. *Rodentia* sp. (Right humerus.)
Proximal epiphysis absent; subadult.
12. Rodent sp., small. *Rodentia* sp. (Right radius.)
Proximal epiphysis absent; subadult.
13. Avian sp., medium-sized. *Aves* sp. (Extremity bone.)
Shaft, portion, possibly radius. X-ray appearance supports its avian identification.

Lot 88: *Pit 8, Chamber 1, 30-40 cm.*

6. to 8. Mammal sp., large-medium-sized. *Mammalia* sp. (Rib shaft.)
Fragment.
9. Spotted or Hog-nosed Skunk. *Spilogale* or *Conepatus* sp.[12] (Left humerus.)
Major portion; 2 fitted pieces. Appears smaller than the Striped Skunk (*Mephitis mephitica*); no postcranial material for *Spilogale* or *Conepatus* sp. Adult specimen.
10. Mammal sp., small. *Mammalia* sp. (Left femur.)
Proximal shaft, portion, with capital and trochanteric epiphyses absent; subadult.
11. Bat sp., large. *Microchiroptera* sp. (Left radius.)
Proximal ⅔.
12. Red Brocket or White-tailed Deer. *Mazama americana* or *Odocoileus virginianus*. (Left patella.)
13. Swallow sp. *Iridoprocne albilinea*[13] or *Petrochelidon* sp. (Left ulna.)
This specimen fits well an ulna from the Mangrove Swallow (*Iridoprocne albilinea*) and the Cliff Swallow (*Petrochelidon pyrrhonota*); no reference material for the Cave Swallow (*P. fulva*) is available.
14. Mouse sp. *Cricetinae* sp. (Right femur.)
Distal epiphysis absent; subadult.
15. to 17. Mouse sp. *Cricetinae* sp. (Right femur.)
Capital, trochanteric and distal epiphyses absent; from subadult individuals.
18. Mouse sp. *Cricetinae* sp. (Left femur.)
Distal epiphysis absent; subadult.
19. Mouse sp. *Cricetinae* sp. (Left femur.)

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[12] Hall and Kelson (p. 929) comment: "*Spotted Skunks* are found in a variety of habitats: rocky outcrops, chaparral, palmetto scrub, and barnyards." The habitats of *Hog-nosed Skunks* are noted by Walker (p. 1214) as wooded and open areas, while dens are located in rocky places.

[13] Russell (p. 132) describes the *Mangrove Swallow* as "a common resident of coastal areas, wet grassy savannas in the coastal pine ridges, and all large rivers, often occurring far inland." There is but one record of a *Cliff Swallow* in British Honduras, at Half Moon Cay, many miles offshore. No known sightings of the *Cave Swallow* in British Honduras have been made.

[14] The subadult age of this humerus makes its assignment to one of the three *Sciurus sp.* recorded from British Honduras difficult. The Variegated Squirrel (*S. variegatoides*) and Deppe's Squirrel (*S. deppei*) are both found in humid lowland situations and dry woodlands on uplands (Hall and Kelson, pp. 379 and 381).

Capital, trochanteric and distal epiphyses absent; from subadult individuals.

20. Squirrel sp., small. *Sciuridae* sp.[14] (Right humerus.)
    Proximal epiphysis absent, entepicondylar foramen present; subadult.
21. Rodent sp., small. *Rodentia* sp. (Right innominate bone.)
    Anterior portion; no acetabular epiphysial line.
22. Rodent sp., small. *Rodentia* sp. (Right innominate bone.)
    Anterior portion; no acetabular epiphysial line.
23. Rodent sp., small. *Rodentia* sp. (Left innominate bone.)
    Anterior portion; no acetabular epiphysial line.
24. Mouse sp. *Myomorpha* sp. (Right tibia.)
    Proximal epiphysis absent; subadult.
25. to 30. Mammal sp., small. *Mammalia* sp. (Bone.)
    Fragments.

Lot 90: *Pit 8, Chamber 1, 40-50 cm.*

2. Mammal sp., large. *Mammalia* sp. (Bone.)
   Fragment; cortex has a juvenile appearance.

Lot 91: *Pit 9, Chamber 1, 0-10 cm.*

1. White-tailed Deer. *Odocoileus virginianus.* (Antler base.)
   Portion, with slightly raised burr; proximal end fractured; fits Spec. 2, below. See foot-note 6.
2. White-tailed Deer. *Odocoileus virginianus.* (Antler base.)
   Portion, with slightly raised burr; fits Spec. 1 above.
3. White-tailed Deer. *Odocoileus virginianus.* (Antler portion.)
   Fits Spec. 3, Lot 93.
5. White-tailed Deer. *Odocoileus virginianus.* (Antler portion.)
   Fits Spec. 4, Lot 77.
6. Mammal sp., large-medium-sized. *Mammalia* sp. (Bone fragment.)
   Fragment has a smoothed, somewhat polished surface and rounded edges; artifact. Fits Spec. 21, Lot 77.
7. Crested Guan (?) *Penelope purpurascens.*[15] (Right ulna.)
   Proximal ⅔. Has the morphology of a medium-sized species of the *Cracidae* family.
8. Forest Rabbit. *Sylvilagus brasiliensis.* (Right femur.)
   Proximal shaft, portion. See foot-note 3.
9. Avian sp., large. *Aves* sp. (Extremity bone.)
   Shaft, fragment.
10. White-tailed Deer or Red Brocket. (Antler fragment.)
11. White-tailed Deer or Red Brocket. (Right lower rib.)
    Head, neck and proximal shaft; capital epiphysis absent.

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[15] This ulna specimen from a medium-sized species of the *Cracidae* family is considerably smaller than the Great Curassow (*Crax rubra*) and definitely larger than the Plain Chachalaca (*Ortalis vetula*); the remaining *Cracidae* member, the Crested Guan (*Penelope purpurascens*), which is intermediate in size between the Curassow and Chachalaca, is without skeletal representation here. Hence only a possible identification of the Guan is made. Russell (p. 55) describes the Crested Guan as "a moderately common resident of tall, undisturbed rain forest and ranges from forests near sea level to above 3,200 feet in the Cockscomb Mountains."

12. Raccoon, Cacomistle or Coati. *Procyonidae* sp.[16] (Left calcaneus.) Adult by fused epiphysis.
13. Mammal sp., large. *Mammalia* sp. (Rib shaft.) Fragment.
14. Mammal sp., medium-sized. *Mammalia* sp. (Right femur.) Capital and trochanteric epiphyses absent; cortex appears juvenile.
15. Mammal sp., medium-sized. *Mammalia* sp. (Right tibia.) Shaft, major portion, without distal epiphysis; cortex appears juvenile. Fits Spec. 22 below.
16. Raccoon, Cacomistle or Coati. *Procyonidae* sp. (Left scapula.) Portion, with base of scapular spine. This specimen also appears to be from a small member of the *Procyonidae* family. See foot-note 16.
17. Mammal or avian sp. *Mammalia* sp. or *Aves* sp. (Extremity bone.) Shaft, splinter; many tooth marks present.
18. Turtle sp. *Kinosternon* sp. (Carapace.) Costal plate.
19. Turtle sp. *Kinosternon* sp. (Carapace.) Costal plate.
20. Turtle sp. *Kinosternon* sp. (Shell.) Fragment, 2 fitted pieces.
21. Mammal sp., large-medium-sized. *Mammalia* sp. (Extremity bone.) Shaft, fragment.
22. Mammal sp., medium-sized. *Mammalia* sp. (Right tibia.) Proximal shaft, fragment; cortex appears juvenile. Fits Spec. 15, above.
23. Turtle sp. *Kinosternon* sp. (Carapace.) Costal plate.

Lot 92: *Pit 7, Chamber 1, 60-70 cm.*

1. Nine-banded Armadillo. *Dasypus novemcinctus.*[17] (Scute.) Probably a band scute.
2. Nine-banded Armadillo. *Dasypus novemcinctus.* (Scute.) Tail scute.
3. Nine-banded Armadillo. *Dasypus novemcinctus.* (Scute.) Fragment.

Lot 93: *Pit 9, Chamber 1, 10-20 cm.*

1. Swallow sp. *Iridoprocne albilinea* or *Petrochelidon* sp. (Left humerus.) Note as for Spec. 13, Lot 88 (read "humerus" for "ulna") and also foot-note 13.
2. Common Gallinule. *Gallinula chloropus.*[18] (Left humerus.) Distal half; large specimen.

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[16] This calcaneus specimen appears to be from a small member of the family *Procyonidae*, i.e. from a small Raccoon (*Procyon lotor*), a Cacomistle (*Bassariscus sumichrasti*) or a Coati (*Nasua narica*); lack of reference material of the last two species prevents a more precise identification.

[17] Walker (p. 500) notes that this genus of Armadillo is "partial to dense shady cover and limestone formations from sea level to 3,000 metres elevation" and lives in burrows 0.5 to 3.5 metres underground.

[18] Russell (p. 59) reports approximately 6 sightings of the *Common Gallinule* during 1956-1958 in British Honduras as the only records of this species from the Colony, no specimens having been collected then or previously. A marsh and a marshy pond were the settings for the above observations.

3. White-tailed Deer. *Odocoileus virginianus.* (Antler portion.) Fits with Spec. 3, Lot 91, and with Specs. 4, 5 and 6 below, to give a large Y-shaped portion. See foot-note 6.
4. White-tailed Deer. *Odocoileus virginianus.* (Antler portion.) Fits with Spec. 3 above and Specs. 5 and 6 below.
5. White-tailed Deer. *Odocoileus virginianus.* (Antler portion.) Fits with Specs. 3 and 4 above.
6. White-tailed Deer. *Odocoileus virginianus.* (Antler portion.) Fits with Specs. 3 and 4 above.
7. White-tailed Deer. *Odocoileus virginianus.* (Antler portion.) 4 fitted pieces.
8. White-tailed Deer or Red Brocket. (Antler portion.)
10. Jamaican Fruit-eating Bat. *Artibeus jamaicensis.*[19] (Skull.) Complete specimen, but with left upper 4th premolar only present. See foot-note 9.
11. Bat sp., large. *Microchiroptera* sp. (Atlas.) Articulates well with Spec. 10 above.
12. Nine-banded Armadillo. *Dasypus novemcinctus.* (Scute.) Fragment.
13. Mammal sp., large-medium-sized. *Mammalia* sp. (Vertebral articular process.)
14. Mammal sp., medium-sized. *Mammalia* sp. (Extremity bone.) Shaft, portion.
15. Mammal sp. *Mammalia* sp. (Bone.) Fragment.
16. Mammal sp. *Mammalia* sp. (Bone.) Fragment.
17. Turtle sp. *Chelonia* sp. (Carapace.) Costal plate, fragment.
18. Red Brocket or White-tailed Deer. *Mazama americana* or *Odocoileus virginianus.* (Proximal phalanx.)
19. Red Brocket. *Mazama americana.* (Mandible, right half.) Portion contains mental foramen.
21. Mammal sp., large-medium-sized. *Mammalia* sp. (Extremity bone.) Shaft, portion.
22. Mammal sp., large-medium-sized. *Mammalia* sp. (Extremity bone.) Shaft, fragment.
23. Opossum sp. *Didelphidae* sp. (Mandible, left half.) Anterior third missing; cortex has juvenile appearance.
24. Mammal sp., medium-sized. *Mammalia* sp. (Left femur.) Proximal ⅔ present; capital and trochanteric epiphyses absent; subadult.

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[19] Measurement of the *Artibeus jamaicensis* skull noted its greatest length as 27.05 mm., the condylo-basal length as 23.75 mm. and the zygomatic width as 16.55 mm.; such measurements lie within the range of those for this species (Hall and Kelson, p. 136-137), and not within the range of measurements for the other three species of *Artibeus*, recorded in British Honduras.

25. Squirrel sp. *Sciuridae* sp. (Right humerus.)
Distal ¾, with distal epiphysis absent; subadult. See foot-note 14.

26. Mammal sp., medium-sized. *Mammalia* sp. (Left rib.)
2 fitted pieces; no capital epiphysial line.

27. Mouse sp. *Cricetinae* sp. (Right femur.)
Proximal ¾, with capital and trochanteric epiphyses absent; subadult.

28. Mouse sp. *Myomorpha* sp. (Left tibia.)
Proximal ⅔, with proximal epiphysis absent; subadult.

29. Mammal sp., medium-sized. *Mammalia* sp. (Sternebra.)

30. Turtle sp. *Kinosternon* sp. (Shell, fragment.)
3 fitted pieces.

31. to 41. Mammal sp., medium-sized. *Mammalia* sp. (Bone.)
Fragments.

Lot 94: *Pit 7, Chamber 1, 70-80 cm.*

1. Grasshopper, Rusty or Botteri's Sparrow. *Ammodramus savannarum* or *Aimophila* sp.[20] (Left humerus.)
Specimen fits the Grasshopper Sparrow well, but lack of reference material for the Rusty Sparrow (*Aimophila rufescens*) and Botteri's Sparrow (*A. botterii*) prevents their exclusion.

2. Mouse sp. *Cricetinae* sp. (Left femur.)
Proximal ¾; capital and trochanteric epiphyses present.

3. Big-eared Climbing Rat. *Ototylomys phyllotis*. (Mandible, right half.)
2nd molar present. See foot-note 2.

4. Big-eared Climbing Rat. *Ototylomys phyllotis*. (Mandible, right half.)
2nd and 3rd molars present.

5. Mouse sp. *Myomorpha* sp. (Right tibia.)
Major portion; proximal epiphysis absent.

6. Mammal sp., medium-sized. *Mammalia* sp. (Right calcaneus.)
Rodent teeth marks present; no epiphysial line present.

7. Mammal sp., medium-sized. *Mammalia* sp. (Bone.)
Fragment.

8. Raccoon, Cacomistle or Coati. *Procyonidae* sp. (Distal phalanx.)
Adult, by absence of epiphysial line. See foot-note 16; for "calcaneus", read "distal phalanx".

9. Raccoon, Cacomistle or Coati. *Procyonidae* sp. (Distal phalanx.)
Adult, by absence of epiphysial line. See foot-note 16; for "calcaneus", read "distal phalanx".

10. to 13. Nine-banded Armadillo. *Dasypus novemcinctus*. (Band scute.)
See foot-note 17.

14. to 20. Nine-banded Armadillo. *Dasypus novemcinctus*. (Tail scute.)
See foot-note 17.

21. to 28. Nine-banded Armadillo. *Dasypus novemcinctus*. (Scute fragment.) See foot-note 17.

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[20] "Northern populations of the *Grasshopper Sparrow* are regular winter visitants in British Honduras," and like the resident subspecies of this Sparrow, frequent grassy fields and the grassland of the pine ridges, including the Mountain Pine Ridge (Russell, p. 183). Similarly, the two *Aimophila* sp. noted are year-round residents of the pineland areas.

Lot 98: *Pit 10 (Floor 1), Chamber 1; above floor*

1. Common Opossum. *Didelphis marsupialis.*[21] (Right scapula.) Small specimen.

Lot 99: *Pit 10, Chamber 1, 0-10 cm. below Floor 1*

1. Forest Rabbit. *Sylvilagus brasiliensis.* (Mandible.) Right ramus, with incisor and 3rd and 4th premolars. See foot-note 3.
2. Forest Rabbit. *Sylvilagus brasiliensis.* (Mandible.) Right angle of mandible, portion.
3. Mammal sp. *Mammalia* sp. (Bone.) Portion.
4. Mammal sp. *Mammalia* sp. (Bone.) Fragment.
5. Bat sp., large. *Microchiroptera* sp. (Left radius.) Proximal ¾.

Lot 103: *Pit 10, Chamber 1, 10-20 cm. below Floor 1*

1. Forest Rabbit. *Sylvilagus brasiliensis.* (Right tibia.) Distal shaft, portion. See foot-note 3.
2. Hispid Cotton Rat. *Sigmodon hispidus.*[22] (Mandible, right half.) Incisor and the 3 molars present.
3. American Leaf-nosed Bat, large sp. *Phyllostomidae* sp. (Right humerus.) Believed to be from *Artibeus*, *Trachops* or *Chropterus*; see note re Spec. 11, Lot 79.
4. Mouse sp. *Cricetinae* sp. (Right femur.) Capital, trochanteric and distal epiphyses absent; subadult.
5. Forest Rabbit. *Sylvilagus brasiliensis.* (Right lower 3rd premolar tooth.)
6. Armadillo sp. *Dasypodidae* sp. (Right petro-tympanic bone.) Identification of this bone is made difficult by its anatomical position, but suggests a small Armadillo sp.
7. Mammal sp., large-medium-sized. *Mammalia* sp. (Bone.) Portion.
8. Mammal sp., small. *Mammalia* sp. (Extremity bone.) Shaft portion, with distal epiphysis absent; subadult.
9. Mammal sp., small. *Mammalia* sp. (Right innominate bone.) Ilium, fragment.
10. Mammal sp., large-medium-sized. *Mammalia* sp. (Extremity bone.) Shaft, portion.

Lot 104: *Pit 10, 20-30 cm. below Floor 1*

1. Barn Owl. *Tyto alba.*[23] (Left femur.) Specimen almost complete.

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[21] Walker (p. 24) comments that *Opossums* usually inhabit forested or brushy areas, spending the day in rocky crevices, hollow tree trunks, under piles of dead brush or in burrows.

[22] *Hispid Cotton Rats* are observed by Hall and Kelson (p. 671) as usually being the most numerous mammals wherever they occur. Their habitat varies somewhat, but usually includes tall weeds and grass.

[23] Russell (p. 78) comments re the *Barn Owl* that "This owl has not been collected in British Honduras," but has been observed on at least four occasions. Godfrey (p. 211) notes that it "forages over fields and similar open places particularly where small rodents abound. Roosts and nests in buildings, hollow trees, and cavities in cliffs and banks."

2. Common Gallinule. *Gallinula chloropus.* (Left humerus.)
   Proximal half; from a different individual to Spec. 2, Lot 93. See foot-note 18.
3. Avian sp., medium-sized. *Aves* sp. (Extremity bone.) Shaft, portion.
4. Bat sp., large. *Microchiroptera* sp. (Right radius.) Proximal ¾.
5. American Leaf-nosed Bat sp., large. *Phyllostomidae* sp. (Right humerus.)
   Entire specimen; adult by lack of epiphyseal line. See note for Spec. 11, Lot 79.
6. Mouse sp. *Cricetinae* sp. (Right femur.)
   Capital epiphysis absent; subadult.
7. Baird's Tapir. *Tapirus bairdii.* (Left rib.)
   Head, neck and proximal shaft; 3 fitted pieces. See foot-note 7. Capital epiphysis fused.
8. Baird's Tapir. *Tapirus bairdii.* (Prob. rib.) Shaft, portion.
10. to 12. Mammal sp., large-medium-sized. *Mammalia* sp. (Bone.)
    Fragments.
13. Common Opossum. *Didelphis virginianus.* (Mid-lumbar vertebra.)
    Epiphysial plates absent; subadult. See foot-note 21. Artic. with Spec. 1, Lot 110.
14. Forest Rabbit. *Sylvilagus brasiliensis.* (Right tibia.)
    Distal third; adult by lack of epiphysial line. See foot-note 3.
15. Mammal sp., large-medium-sized. *Mammal* sp. (Extremity bone.)
    Shaft, portion.
16. Spotted or Hog-nosed Skunk. *Spilogale* or *Conepatus* sp. (Left humerus.)
    Distal half; adult by lack of epiphysial line; from a different individual than Spec. 9, Lot 88 (see note). Also see foot-note 12.
17. Forest Rabbit. *Sylvilagus brasiliensis.* (Left tibia.)
    Distal half. See foot-note 3.
18. Mammal sp., large-medium-sized. *Mammalia* sp. (Extremity bone.)
    Shaft, fragment.
19. Mammal sp., medium-sized. *Mammalia* sp. (Left femur.)
    Proximal shaft, portion, with capital and trochanteric epiphyses absent; subadult.
20. Mouse sp. *Myomorpha* sp. (Right tibia.)
    Proximal and distal epiphyses absent; subadult.
21. Mammal sp., medium-sized. *Mammalia* sp. (Humerus.)
    Distal shaft, fragment, with distal epiphysis absent; subadult.
22. Mammal sp., small. *Mammalia* sp. (Right femur.)
    Proximal shaft, fragment, with capital and trochanteric epiphyses absent; subadult.

Lot 110: *Pit 10, 30-40 cm. below Floor 1*

1. Common Opossum. *Didelphis virginianus.* (Mid-lumbar vertebra.)
   Epiphysial plates absent; subadult. Articulates well with Spec. 13, Lot 104, above.

Lot 112: *Pit 11, Chamber 1, 0-10 cm.*

1. Mammal sp., medium-sized. *Mammalia* sp. (Rib shaft.)
   Portion.
2. Red Brocket or White-tailed Deer. *Mazama americana* or *Odocoileus virginianus.* (Mandible.)
   Ramus portion.
3. Bat sp., large. *Microchiroptera* sp. (Left radius.)
   Entire specimen, length 57.9 mm. See note for Spec. 1, Lot 54.
4. Bat sp., large. *Microchiroptera* sp. (Left radius.)
   Distal half.
5. Mouse sp. *Cricetinae* sp. (Left femur.)
   Capital, trochanteric and distal epiphyses absent; subadult.
6. Mouse sp. *Cricetinae* sp. (Right femur.)
   Trochanteric epiphysis absent; subadult.
7. Rodent sp., small. *Rodentia* sp. (Right innominate bone.)
   Pubis missing; no acetabular epiphysial line.
8. Rodent sp., small. *Rodentia* sp. (Right innominate bone.)
   Pubis missing; no acetabular epiphysial line.

Lot 114: *Pit 12, Chamber 1, 0-10 cm.*

1. Red Brocket or White-tailed Deer. *Mazama americana* or *Odocoileus virginianus.* (Right radius.)
   Distal portion; adult by lack of epiphysial line; 3 fitted pieces. Surface gray generally, with pale orange overlying particles in many areas; gray, faintly orange powder and particles removed from among cancellous trabeculae, and preserved as Spec. 1A. Subsurface probably unchanged. Has a similar surface appearance to the Brocket antler, Specs. 2, 3 and 4, Lot 71.
2. Paca. *Agouti paca.*[24] (Left temporal bone.)
   Petro-tympanic portion, with many small rounded surface depressions.
3. Mammal sp., large-medium-sized. *Mammalia* sp. (Vertebra.)
   Neural arch, dorsal fragment.
4. Mammal sp., medium-sized. *Mammalia* sp. (Vertebra.)
   Body, fragment. Adult, by fused epiphysial plate.
5. Mammal sp., large. *Mammalia* sp. (Vertebra.)
   Zygapophysis, fragment.
6. Mammal sp., large-medium-sized. *Mammalia* sp. (Extremity bone.)
   Shaft, fragment.
7. Mammal sp., medium-sized. *Mammalia* sp. (Vertebra.)
   Epiphysial plate; subadult.
8. Agouti or Paca sp. *Dasyproctidae sp.*[25] (Left ischium.)
   Portion; size suggests a small sp. or small individual. Surface shows a fine grey powder (ash?) adherent to its interior surface. See foot-note 24, and below.

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[24] "*Pacas* are nocturnal, spending the day in burrows of their own construction. These are located in banks, slopes, among tree roots, or under rocks." (Walker, p. 1026).

[25] Walker (p. 1027) observes: "*Agoutis* are found in cool, damp lowland forests, grassy streambanks, thick brush, high dry hillsides, savannahs and cultivated areas."

Lot 121: *Pit 10, Chamber 1; Burial 3*

1. Avian sp., large-medium-sized. *Aves* sp. (Extremity bone.)
   Shaft fragment; crescentic in outline, with both ends and 1 border smoothed, other border with sharp outline from fracture. Can be joined with Spec. 2, and specs. 3 and 4 can also be joined, indicating that all 5 specs. may have been cut from a single bone.
2. Avian sp., large-medium-sized. *Aves* sp. (Extremity bone.)
   Shaft fragment; crescentic in outline, with both ends and 1 border smoothed, other border with sharp outline from fracture. Can be joined with Spec. 2, and specs. 3 and 4 can also be joined, indicating that all 5 specs. may have been cut from a single bone.
3. Avian sp., large-medium-sized. *Aves* sp. (Extremity bone.)
   Shaft fragment; crescentic in outline, with both ends and 1 border smoothed, other border with sharp outline from fracture. Can be joined with Spec. 2, and specs. 3 and 4 can also be joined, indicating that all 5 specs. may have been cut from a single bone.
4. Avian sp., large-medium-sized. *Aves* sp. (Extremity bone.)
   Shaft fragment; crescentic in outline, with both ends and 1 border smoothed, other border with sharp outline from fracture. Can be joined with Spec. 2, and specs. 3 and 4 can also be joined, indicating that all 5 specs. may have been cut from a single bone.
5. Avian sp., large-medium-sized. *Aves* sp. (Extremity bone.)
   Shaft fragment; crescentic in outline, with both ends and 1 border smoothed, other border with sharp outline from fracture. Can be joined with Spec. 2, and specs. 3 and 4 can also be joined, indicating that all 5 specs. may have been cut from a single bone.

Lot 127: *Pit 12, Chamber 1, 40-50 cm.*

1. Baird's Tapir. *Tapirus bairdii.* (Right 2nd metacarpal bone.)
   Major portion; no epiphysial line present; fits Spec. 2, Lot 84. See foot-note 7.

Lot 130: *Pit 14, Chamber 2, 10-20 cm.*

1. Avian sp., medium-sized. *Aves* sp. (Left humerus.)
   Distal end missing; cortex has a juvenile appearance.

Lot 132: *Alcove S.W. of Floor 1, Chamber 1, 0-10 cm.*

1. Turtle sp., medium-sized. *Kinosternon* sp. (Carapace.)
   Fragment.
2. Turtle sp., medium-sized. *Kinosternon* sp. (Carapace.)
   Marginal plate.

Lot 134: *Pit 14, Chamber 2, 36-40 cm.*

1. Jamaican Fruit-eating Bat. *Artibeus jamaicensis.*[26] (Skull.)
   No teeth present. See foot-note 9.
2. Turtle sp. *Kinosternon* sp. (Shell.)
   Fragment.

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[26] Measurements of the *Artibeus jamaicensis* skull shows its greatest length to be 27.85 mm., its condylo-basal length as 24.60 mm., and its zygomatic width as 17.50 mm. Such measurements lie within the range of those for this species (Hall and Kelson, pp. 136-137, and Goodwin, 1942, p. 135.)

APPENDIX B

DISTRIBUTION OF FAUNAL MATERIAL BY ZOOLOGICAL TAXA

All specimens are from Chamber 1, unless otherwise noted.

CLASS AVES—24 Specimens	*Skeletal Element*	*Lot No.*	*Age Group (approx.)*	*No. of Ind. Repres*
Ardeidae:				
Egret or Heron sp.	Upper mandible	6		1
Ardeinae sp.				
Cracidae:				
Crested Guan (?)	Right ulna.	91		1
Penelope purpurascens				
Phasianidae:				
Black-throated Bobwhite	Right tibia	52		
Colinus nigrogularis	Left tibia	77		2
	Left tibia	79		
Rallidae:				
Rail or Crake sp. (?)	Left humerus	79		1 or more
Rallinae sp.	Left coracoid	79		
Common Gallinule	Left humerus	93		2
Gallinula chloropus	Left humerus	104		
Tytonidae:				
Barn Owl	Left femur	104		1
Tyto alba				
Hirundinidae:				
Swallow sp.	Left ulna	88		1 or more
Hirundinidae sp.	Left humerus	93		
Fringillidae:				
Sparrow sp.	Left humerus	94		1 In armadillo burrow.
Emberizinae sp.				

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DISTRIBUTION OF FAUNAL MATERIAL BY ZOOLOGICAL TAXA

All specimens are from Chamber 1, unless otherwise noted.

	Skeletal Element	*Lot No.*	*Age Group (approx.)*	*No. of Ind. Repres.*
Passeriformes:				
Perching Bird sp.	Right humerus	52		
Passeriformes sp.				
Aves sp., large	Extremity bone	91		
Aves sp., large-medium-sized	Extremity bone	81		
Aves sp., large-medium-sized	Extremity bone (5)	121		With Burial 4.
Aves sp., medium-sized	Extremity bone	87		In Vessel rim.
Aves sp., medium-sized	Extremity bone	104		
Aves sp., medium-sized	Left humerus	130		Juvenile; in Chamber 2.
CLASS MAMMALIA				
MARSUPIALIA—5 Specimens				
Didelphidae:				
Common Opossum	Right scapula	98	?	1 or more
Didelphis virginianus	Lumbar vertebra	104	Subadult	
	Lumbar vertebra			
Four-eyed Opossum	Mandible, rt. half	110	Subadult	
Philander opossum		87	Adult	1
Opossum sp.	Mandible, left half	(Vessel)		
Didelphidae sp.		93	Juvenile	1
CHIROPTERA—20 Specimens				
Phyllostomidae:				
Jamaican Fruit-eating Bat	Skull	79	Adult	3
Artibeus jamaicensis	Skull	93	Adult	
	Skull	134	Adult	
American Leaf-nosed Bats, large sp.	Left humerus (2)	79	Adult	
Phyllostomidae sp.	Right humerus	79	Adult	
	Right humerus	103	Adult	
	Right humerus	104	Adult	

American Leaf-nosed Bats, small sp.	Left humerus (2)	79	Adult	
New World Bats, large sp.	Left radius	54	Adult	
Microchiroptera sp.	Right radius	79	Adult	
	Ulna	79	Adult	
	Left radius	88	Adult	
	Atlas	93	Adult	
	Left radius	99	Adult	
	Right radius	104	Adult	
	Left radius (2)	112	Adult	
New World Bats, small sp.	Left radius	52	Adult	
EDENTATA—24 Specimens				
Dasypodidae:				
Nine-banded Armadillo	Scute (3)	92	?	1 or more
Dasypus novemcinctus	Scute (19)	94	?	
	Scute	93	?	
Armadillo sp.	Right petrotympanic bone	103	?	
Dasypodidae sp.				
LAGOMORPHA—9 Specimens				
Leporidae:				
Forest Rabbit	Right radius	52	Subadult	1 or more
Sylvilagus brasiliensis	Mandible, right half	81	Adult	
	Right femur	91	?	
	Mandible, right half (2)	99	Adult	2 or more
	Right tibia	103	?	
	Right premolar	103	Adult	
	Right tibia	104	Adult	
	Left tibia	104	?	
RODENTIA—104 Specimens				
Sciuridae:				
Squirrel sp., small	Mandible, left half	87	Adult	1
Sciuridae sp.		(Vessel)		
Sciuridae sp., small	Right humerus	88	Subadult	1
Squirrel sp.	Right humerus	93	Subadult	1
Sciuridae sp.				

DISTRIBUTION OF FAUNAL MATERIAL BY ZOOLOGICAL TAXA

All specimens are from Chamber 1, unless otherwise noted.

CLASS MAMMALIA	*Skeletal Element*	*Lot No.*	*Age Group (approx.)*	*No. of Ind. Repres.*
Cricetidae:				
Big-eared Climbing Rat	Mandible, right half	52	Adult	4
Ototylomys phyllotis	Mandible, right half	87 (Vessel)	Adult	
	Mandible, left half	87 (Vessel)	Adult	
	Mandible, right half (2)	94	Adult	
Hispid Cotton Rat	Mandible, right half (2)	103	Adult	1
Sigmodon hispidus				
Mouse and Rat sp.				
Cricetinae sp.	Right femur (13)	52	Subadult	13 or more
	Left femur (9)	52	Subadult	
	Left femur	77	Subadult	
	Right femur	79	Adult	
	Right femur (6)	79	Subadult	
	Left femur (2)	79	Subadult	
	Left femur	81	Subadult	
49 Specimens	Right femur (2)	81	Subadult	
	Left femur (2)	87 (Vessel)	Adult	
	Right femur (4)	88	Subadult	
	Left femur (2)	88	Subadult	
	Right femur	93	Subadult	
	Left femur	94	Adult	
	Right femur	103	Subadult	
	Right femur	104	Subadult	
	Left femur	112	Subadult	
	Right femur	112	Subadult	

Mouse and Rat sp.	Right tibia (5)	52	Subadult	
Myomorpha sp.	Left tibia (4)	52	Subadult	
	Right tibia (4)	79	Subadult	
	Right tibia (2)	87	Subadult	
		(Vessel)		
19 Specimens	Right tibia	88	Subadult	
	Left tibia	93	Subadult	
	Right tibia	94	Subadult	
	Right tibia	104	Subadult	
Dasyproctidae:				
Paca	Skull, left temporal bone	114	?	1
Agouti paca				
Paca or Agouti sp.	Left ischium	114	?	
Dasyproctidae sp.				
Rodent sp., small	Left innominate bone	6	?	
Rodentia sp.	Left humerus (3)	52	Subadult	
	Right humerus	52	Subadult	
	Left innominate	52	?	
	Right innominate	52	?	
	Sacrum	77	Subadult	
	Right femur	79	Adult	
	Left humerus (3)	79	Subadult	
	Right humerus (2)	79	Subadult	
25 Specimens	Left innominate	79	Adult	
	Right innominate	79	Adult	
	Right ulna	79	Adult	
	Right humerus	87	Adult	
		(Vessel)		
	Right humerus	87	Subadult	
	Right radius	87	Subadult	
	Right innominate (2)	88	Adult	
	Left innominate	88	Adult	
	Right innominate (2)	112	Adult	

DISTRIBUTION OF FAUNAL MATERIAL BY ZOOLOGICAL TAXA

All specimens are from Chamber 1, unless otherwise noted.

CLASS MAMMALIA	*Skeletal Element*	*Lot No.*	*Age Group (approx.)*	*No. of Ind. Repres.*
CARNIVORA—8 Specimens				
Procyonidae:				
Coati	Left canine tooth	79	?	1 or more
Nasua narica				
Coati, Cacomistle or Raccoon	Left calcaneus	91	Adult	
Procyonidae sp.	Left scapula	91	Adult	
	Distal phalanx (2)	94	Adult	
Mustelidae:				
Skunk sp.	Right molar tooth	14	Adult	
Mustelidae sp.	Left humerus	88	Adult	2 or more
	Left humerus	104	Adult	
PERISSODACTYLA—5 Specimens				
Tapiridae:				
Baird's Tapir	Patella	77	?	1 or more
Tapirus bairdii	Right 2nd metacarpal bone	84	Adult	
	Left rib	104	Adult	
	Rib	104	?	
	Right 2nd metacarpal bone	127	Adult	
ARTIODACTYLA—34 Specimens				
Cervidae:				
Red Brocket	Antler (3)	71	Adult	2 or more
Mazama americana	Antler	79	Adult	
	Mandible, right half	93	?	
White-tailed Deer	Antler	77	Adult	1 or more
Odocoileus virginianus	Antler (4)	91	Adult	
	Antler (5)	93	Adult	

Red Brocket or White-tailed Deer	Right patella	75	?
	Metapodial bone	76	Subadult
	Antler (8)	77	Adult
	Right calcaneus	84	Adult
	Metapodial bone	77	?
	Left patella	88	?
19 Specimens	Antler	91	Adult
	Right lower rib	91	Subadult
	Antler	93	?
	Proximal phalanx	93	Adult
	Mandible, ramus	112	?
	Right radius	114	Adult
MAMMALIA			
Mammal sp., large[1]	Extremity bone	77	?
Mammalia sp.	Rib (2)	79	?
	Extremity bone (2)	84	?
	Bone	90	Juvenile
8 Specimens	Rib	91	?
	Vertebra, zygapophysis	114	?
Mammal sp., large-medium-sized	Extremity bone	57	?
Mammalia sp.	Extremity bone	77	?
	Bone	77	?
21 Specimens	Bone	81	?
	Rib (3)	88	?
	Bone	91	?
	Extremity bone	91	?
	Vertebra, zygapophysis	93	?
	Extremity bone (2)	93	?
	Bone	103	?
	Extremity bone	103	?
	Bone (3)	104	?
	Extremity bone (2)	104	?
	Vertebra, dorsal arch	114	?
	Extremity bone	114	?

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[1] Mammal sp., large, may be expected to include in this area of British Honduras white-tailed deer, red brocket, tapir, jaguar, cougar and man.

DISTRIBUTION OF FAUNAL MATERIAL BY ZOOLOGICAL TAXA

All specimens are from Chamber 1, unless otherwise noted.

CLASS MAMMALIA	*Skeletal Element*	*Lot No.*	*Age Group (approx.)*	*No. of Ind. Repres.*
Mammal sp., medium-sized[2]	Left femur	77	Subadult	
Mammalia sp.	Extremity bone	79	?	
	Extremity bone	84	Juvenile	
	Right femur	91	Juvenile	
	Right tibia (2)	91	Juvenile	
	Extremity bone	93	?	
	Left femur	93	Subadult	
28 Specimens	Left rib	93	Adult	
	Sternebra	93	?	
	Bone (11)	93	?	
	Right calcaneus	94	Adult	
	Bone	94	?	
	Left femur	104	Subadult	
	Humerus	104	Subadult	
	Rib	112	?	
	Vertebra, body	114	Adult	
	Vertebra, plate	114	Subadult	
Mammal sp., small[3]	Left femur	52	Juvenile	
Mammalia sp.	Metapodial bone	79	Adult	
	Bone (11)	79	?	
23 Specimens	Left femur	88	Subadult	
	Bone (6)	88	?	
	Extremity bone	103	Subadult	
	Right innominate	103	?	
	Right femur	104	Subadult	

Mammal sp., size not estimated	Bone (11)	52	?	
Mammalia sp.	Bone (2)	93	?	
15 Specimens	Bone (2)	99	?	
CLASS REPTILIA				
CHELONIA—16 Specimens				
Mud Turtle sp.	Carapace	71	?	1 or more
Kinosternon sp.	Carapace (3)	75		
	Shell (2)	75		
	Carapace	77		
	Carapace (3)	91		
	Shell	91		
	Carapace	93		
	Shell	93		
	Carapace (2)	132		
	Shell	134		
CLASS AMPHIBIA				
ANURA—2 Specimens				
Frog or Toad sp., small	Left humerus	79	?	1
Anura sp.				
Frog or Toad sp., medium-sized	Tibio-fibula	79	?	1
Anura sp.				

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[2] Mammal sp., medium-sized, may be expected to include in this area of British Honduras the opossums, forest rabbit, anteaters, armadillo, paca, agouti, skunks, otter, raccoons, the smaller felids and peccaries.

[3] Mammal sp., small, may be expected to include in this area of British Honduras the bats, mice, rats and squirrels.

MOLLUSCA (D.M.P.)

I. Marine species		
CLASS GASTROPODA		
MESOGASTROPODA—11 specimens[4]		
Neritidae		
Virgin Nerite		
Nerita virginea Linné	Chamber 6 Cache	8
Strombidae		
West Indian Fighting Conch		
Strombus pugilis Linné	Chamber 2 surface	1
Strombus sp.	0-10, 10-20 cm.	2
Cassididae		
Flame Helmet		
Cassis flammea Linné	0-20 cm.	1
NEOGASTROPODA—1147 specimens		
Turbinellidae		
West Indian Chank		
Turbinella angulata Solander	0-10, 40-50 cm.; 0-10 cm. below Floor 1; surface, Chamber 4.	3
Olividae		
Netted Olive		
Oliva reticularis Lamarck	Cache 1, Chamber 1; 0-10, 20-30, 30-40 cm.; surface, Chamber 3; Chamber 6 Cache.	38
West Indian Dwarf Olive		
Olivella nivea Gmelin	Chamber 6 Cache	*c.*1000
White Dwarf Olive		
Olivella dealbata Reeve	Chamber 6 Cache	*c.*104
Marginellidae		
Marginella apicina Menke	Chamber 6 Cache	2
CLASS PELECYPODA (LAMELLIBRANCHIA)		
FILIBRANCHIA—1+ specimens		
Spondylidae		
Atlantic Thorny Oyster (?)		
Spondylus, probably *americanus* Hermann	Chamber 3 Cache	1 or more
II. Fresh-water species		
CLASS GASTROPODA		
MESOGASTROPODA—14 specimens		
Ampullariidae		
pond snail		
Pomacea flagellata Say	0-10, 10-20, 30-40 cm.	12
Thiaridae		
river snail ("jute")	0-10 cm.	1
Pachychilus largillierti Phillipi		
unidentified river snail	0-10 cm.	1
CLASS PELECYPODA (LAMELLIBRANCHIA)		
SCHIZODONTA—9 specimens		
Unionidae		
Fresh-water Mussel		
Nephronaias ortmanni Frierson	0-10, 10-20 cm.; 0-3 cm., Chamber 2; ledge above Chamber 2; Chamber 6 Cache.	9
III. Land species		
CLASS GASTROPODA		
Oleacina sp.	0-10, 10-20 cm.	5

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[4] Totals including artifacts not retaining original shell form sufficiently to permit count of individuals indicate the minimum count.

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Summary and Conclusions

Excavation and exploration of Quiroz have produced evidence of two types of archaeological remains which, though they appear to differ from each other, may have resulted from related activities. The first of these consists of surface remains including sherds and vessel groups, the offerings in chambers 1, 2, 3, and 6, and the several elements of artificial construction. Most or all of these materials appear to be related to ceremonial activities within the cave related to the collection of drip water, or *zuhuy ha*, for use in rain or other ceremonies, as described by Thompson (1957, pp. 124-126). Foremost among the indications of such activity are the groups of vessels encountered in niches in chambers 5 and 6, and on the ledge above Chamber 2, uniformly in areas in which the ceiling has been scraped clean of stalactites, producing a marked contrast with surrounding areas which are often festooned with "soda-straw" formations. The jar sherds from chamber floors and, more importantly, from niches and crevices in many areas of the cave may likewise be evidence of an aspect of drip-water collection, related to the vessels in the niche and ledge groups. The stacking of jar sherds in crevices, plus the large quantity of sherds throughout the cave, suggests intentional disposition of broken vessels, and this in turn may be an indication of intentional vessel breakage, perhaps on a cyclic basis. Hence the jar sherd masses in Quiroz may be classifiable as a type of ceremonial dump, resembling in some respects those encountered in Pusilha (Thompson, 1957, p. 128) and possibly Rio Frio E (Pendergast, 1970), but involving material used and broken within the cave rather than introduced from a surface site. This interpretation of the sherd material leads to the view that the vessels on the ledge and in niches represent the last renewal in the cycle of breakage and replacement, and hence should fall at or near the end of the cave's use, though this can neither be verified nor denied on the basis of physical evidence.

Of the five offerings encountered in Quiroz, only that in Chamber 6 can be shown to be directly related to a vessel group, and hence presumably to *zuhuy ha* collection. The Chamber 3 offering appears to be of the sort often found in surface structures, and may have been placed in the chamber at the time of artificial modification of the floor and entrance, serving as a sort of dedicatory cache; in contrast, the putative offering in Chamber 2 lay on the surface and those in Chamber 1 were in the upper part of the deposit, indicating placement late in the history of use of the cave. The Chamber 1 caches in particular do not suggest, either in content or in position, any logical connection with water collection, and the assumption of such connection is based purely on their occurrence in a site in which such activity seems to have been of major importance. In the absence of information from surface sites in the area, the nature of the caches cannot be taken as an indication of the importance of the cave as opposed to a reflection of the wealth level in the region, but the large number of shell artifacts in the offerings probably stems from the value of such materials in this upland area located some distance from the sea.

The artificial alterations of the cave's natural form, including the Chamber 1 wall, the passageway between chambers 2 and 3, and the area connecting chambers 5 and 6, seem to have been designed in the first instance to create a simple division within a chamber, and in the second to enhance already existing divisions, presumably to increase the remoteness of the inner chambers in order to develop a greater atmosphere of mystery surrounding ceremonial activities. The division within Chamber 1 is less easily explained, though the position of the wall at the base of the slope which in effect separates the rear part of the cave from Chamber 1 may indicate that it, too, was part of the aura of secrecy created by the users of the inner chambers, though as all of us who worked in the cave can attest, no artificial additions are really needed to augment the isolation one feels when left with a small light in the totally black inner chambers. Missing from the artificial modification of Quiroz is one element encountered at Actun Balam (Pendergast, 1969, p. 8, plate 2) and in Awe Cave (Thompson, 1957, pp. 126-127), consisting of a small alcove sealed off by a mud-mortared masonry wall, creating a sort of *camera secreta* or grotto, perhaps the scene of special sorts of ceremonial activity.

The single plaster floor in Quiroz appears from its form and size to have been something other than a habitation area, and ceremonial use is therefore assumed. The position of the floor at the base of the steps leading down to Chamber 1 from the cave mouth may indicate that the construction served as a stage for the initial steps in ceremonies undertaken before the more remote chambers were entered; there is, however, no feature of the floor which provides any clue to the specific nature of activities carried out atop it. The subfloor fill, which contained a very small number of sherds and a single shell disc, likewise offers no concrete indications of the reasons for the construction or the use thereof, but the presence of archaeological material in the fill shows that some activity had taken place in Quiroz before the construction was begun. The only other element discovered beneath the floor was Burial 4, which may represent a human sacrifice as a constructional offering, though no solid basis exists for distinguishing such a burial from that of an individual who chanced to die during construction and was interred in the fill as a mark of honour.

While some reconstruction of these aspects of the ceremonial use of Quiroz is possible, we are left with the seemingly insoluble problem of placing such activity in time. The vessels other than jars which were encountered in niche and ledge groups suggest a date in the middle to latter part of the Late Classic, but this can be applied only to this part of the surface ceremonial material, and provides no basis for assessing the span of *zuhuy ha* collection or other activity in the cave. A confusing element is the presence on the ledge in Chamber 2 of a fragment of a vessel of late Pre-Classic date, conceivably indicating that use of the cave commenced prior to the beginning of the Christian Era, but in an extremely unusual location in view of the amount of later activity in evidence. Beyond this, the presence of Tepeu 1 and 2 polychrome vessel fragments on the surface in several chambers points to some sort of ceremonial activity, not clearly related to drip-water collection but nevertheless very probably part of this ceremonial pattern, in the early and middle parts of the Late Classic.

The second body of material in Quiroz is the deposit in Chamber 1, in which the occurrence of lenses of ash and burned soil suggests that the 50 to 90 cm. of material resulted from occupation, or at least intensive human use, of the chamber, a suggestion supported by the presence of food remains scattered throughout the fill. At first glance, this seems inconsonant with the evidence of ceremonial activity in Quiroz, for the picture of a small group living in the outer chamber and stepping aside to permit ceremonial processions to pass over their accumulated garbage stretches one's imagination almost to the breaking point. An equal or even greater stretch would be required if the deposit were to be identified as a dump of material from an unknown surface site somewhere in the vicinity of the cave, for the pottery and other material can hardly be equated with the sort of ceremonial dumping in evidence at Pusilha and probably Rio Frio E. In the absence of a surface site immediately above or otherwise very close to the cave it is inconceivable that simple refuse dumping was involved, for surely no one would transport a heterogeneous mass of common garbage any great distance just to deposit it in a cave, when the standard practice was to toss such material no farther away than the back of the house. On various grounds, then, identification of the Chamber 1 fill as midden deposited by residents of the cave seems inescapable.

The apparent problem posed by the juxtaposition of ceremonial remains and the debris of everyday living may be resolved through recognition of a possible relationship between the two bodies of material. There is every reason to assume, especially if the relatively small amount of water obtainable in a short period from ceiling drips is taken into account and the tie between *zuhuy ha* and rain ceremonies is admitted, that major ceremonial activity related to drip-water collection did not occur year-round, but rather was probably restricted to specific short periods in the annual cycle. If this was the case, use of Quiroz, like that of other caves lying at some distance from surface sites, might well have involved protracted residence at the site by individuals responsible for tending water-collecting vessels and perhaps carrying out minor ceremonies as well. Such residence would have been made somewhat difficult by the lack of potable water at the cave, but in certain circumstances such problems seem not to have loomed very large in ancient Maya life. This sort of pattern, conceivably extending to full-time residence, would presumably have been broken by such events as periodic transfer of drip-water to surface sites, or possibly its use in ceremonies carried out within the cave; these and cyclic destruction of old vessels followed by their replacement with new ones may have required supervision by individuals of higher status, whose presence in the cave for short periods marked the high points of ceremonial life.

Of the two alternative residence patterns, periodic occupation seems less likely in view of the nature of the Chamber 1 midden and also the burials in the fill which, if identification as sacrificial victims is ruled out, are more likely to represent deaths in a resident population in view of the presence of two children as well as the two adults. Acceptance of the Chamber 1 deposit as occupation debris points to the existence of cave "caretakers," who may have enjoyed special status in the ancient Maya social structure. Admittedly the basis for such reconstruction is far from solid, but this explanation serves better than the alternatives to explain the presence of midden in a site where ceremonial activity seems to have been the principal focus of life.

If the midden and the other materials do in fact represent two aspects of a single pattern, then it follows that the pottery from Chamber 1 can be used as an indicator of the period of use of Quiroz, as would not be true if dumping of the material were assumed. The mixture of the midden, which is expectable if long-term occupation of the small area of Chamber 1 is assumed, makes stratigraphic positions of pottery types of little consequence, but there are, as the ceramic descriptions demonstrate, a number of components in the sample which can be dated on stylistic grounds. The earliest datable material in the midden is the group of basal-flange polychrome sherds and the single partly reconstructable specimen, to which a date at or near the beginning of the Early Classic can be ascribed. This date may be further extended by the Pre-Classic sherd from the Chamber 2 ledge, pointing to a beginning date for use of Quiroz perhaps near the end of the Pre-Classic, with occupation in Chamber 1 dating from this time or a slightly later period. At the other end of the time scale, the notched-base tripod dish and the stamp-decorated vessels place the apparent close of activity at Quiroz at or near the end of the Late Classic and initial phase of the Post-Classic (Tepeu 3). In all, the ceramic data suggest a span of no less than 600 and perhaps as much as 800 years or more for the use of Quiroz, during which time a good many gallons of *zuhuy ha* must have been collected, and a very large number of water-collection vessels have served their terms, each group ultimately coming to rest with its predecessors in the form of stacks of sherds in the niches and crevices of the cave.

Excavation of Quiroz has amplified in some respects the discussion of cave use by the Maya presented by Thompson in 1957, adding among other things a body of data from stratigraphic excavation, albeit of a less than wholly satisfying nature. Perhaps more important, the information from Quiroz forms a small addition to the slowly accumulating picture of the prehistory of the Chiquibul, underscoring as have other excavations in the area the rather low degree of content similarity at the level of decorative motifs, and to some extent in vessel shapes, between Chiquibul sites and those of other portions of the central lowlands. The cave fits in many respects into the Tepeu Ceramic Sphere, with at least a few elements of the Tzakol Sphere as these are defined by Willey, Culbert, and Adams (1967, pp. 306-311), but in both instances Quiroz is quite clearly representative of a partly separate development, sharply distinct in many specifics from the Belize Valley/Rio Frio sites, and hence conforming with the pattern previously noted (Pendergast, 1970), in which the physical separation created by the Macal River appears to mark a moderately sharp cultural separation as well. Still lamentably lacking in the Chiquibul are data from unmixed stratified deposits, either in caves or in surface sites. Perhaps when such data become available, Quiroz will be found to fit neatly into a well-defined, clearly dated ceramic sequence, but until that time the information presented here will have to stand, together with that from the few other excavated sites in this part of the southern Cayo District, as the basis for assessing the position of the Chiquibul in Maya prehistory.

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Plate 1 The mouth of the cave as it was in 1961. A. H. Anderson can be seen about to enter the outer chamber.

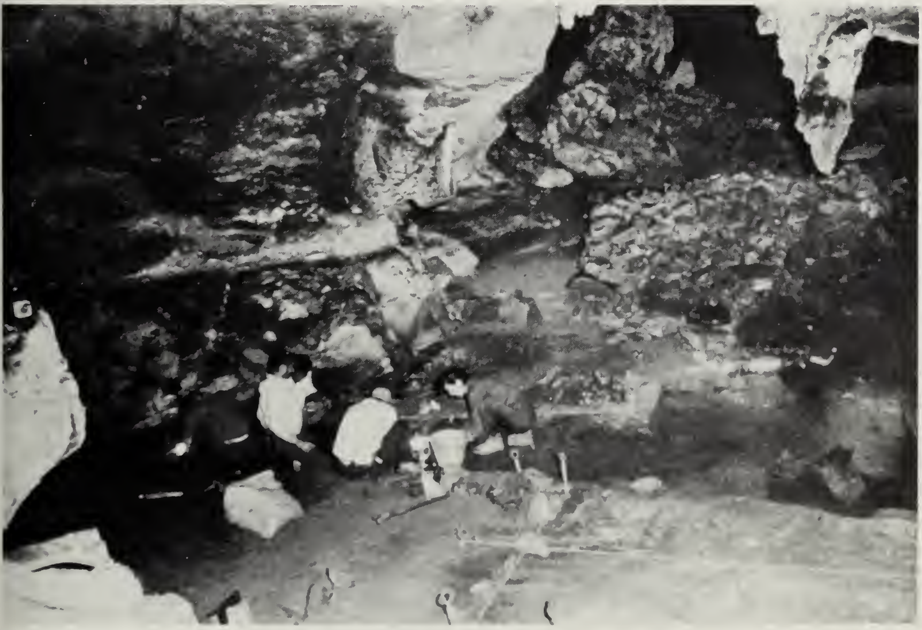

Plate 2 Chamber 1 during excavation. Note the masonry wall at the rear of the area, and Floor 1 in the right foreground.

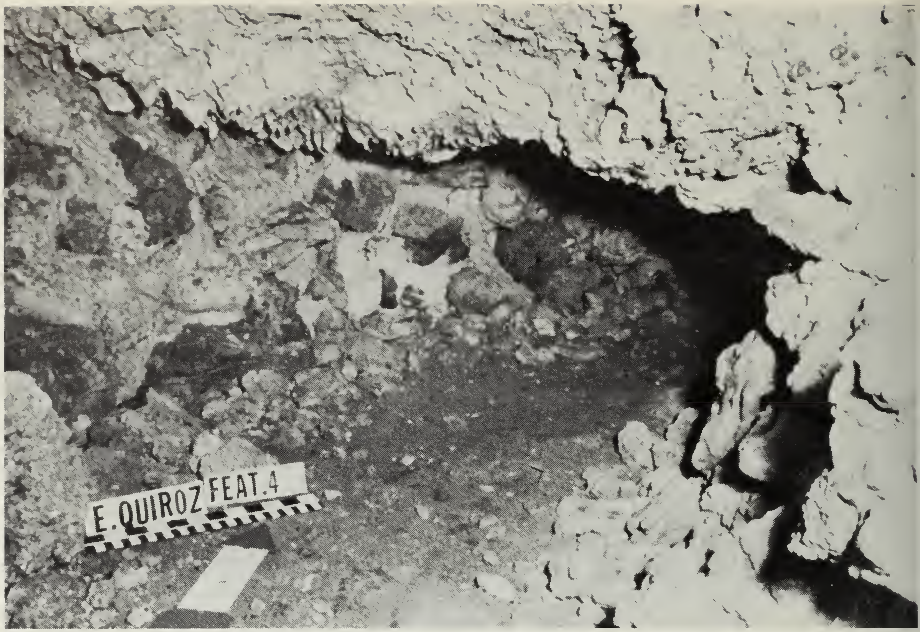

Plate 3 The Chamber 2 end of the passageway connecting this chamber with Chamber 3.

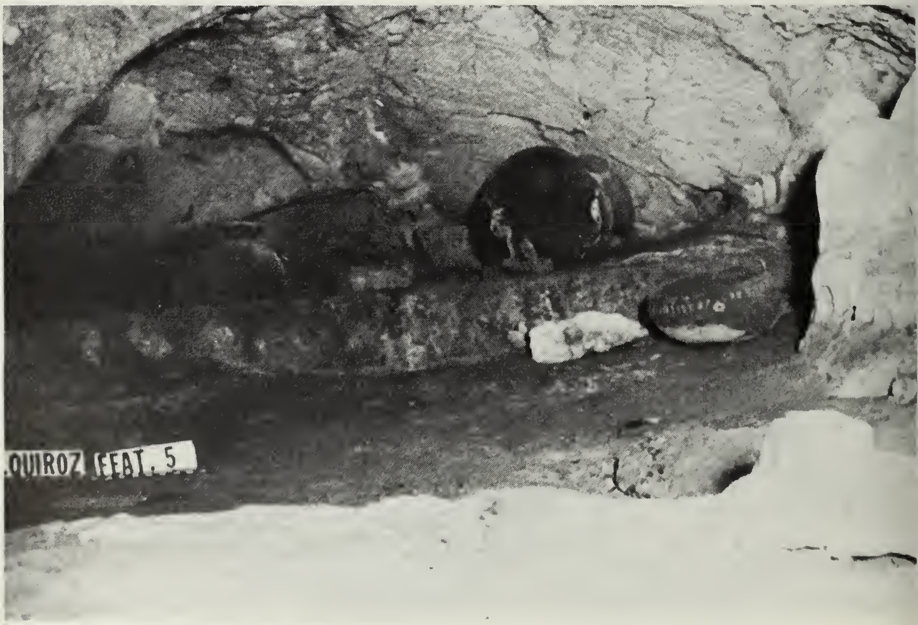

Plate 4 The group of vessels on the ledge above Chamber 2, as found.

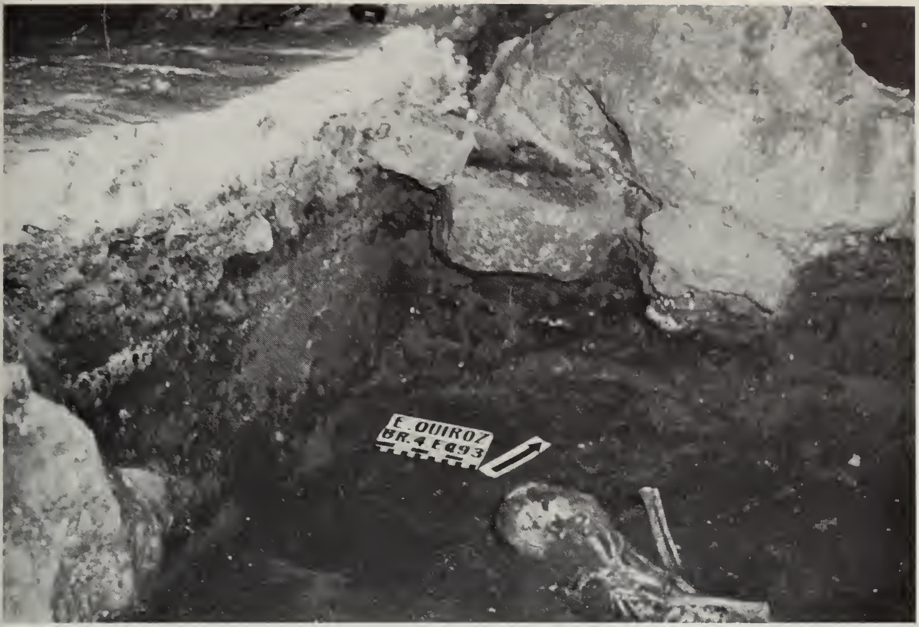

Plate 5 Burial 4 *in situ*, showing the relationship of the interment to Floor 1.

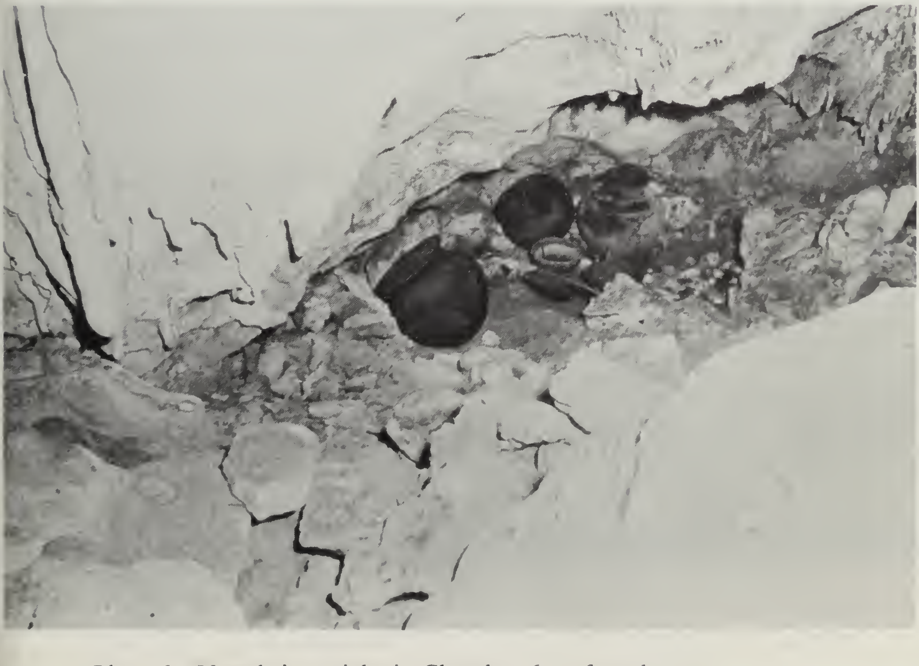

Plate 6 Vessels in a niche in Chamber 6, as found.

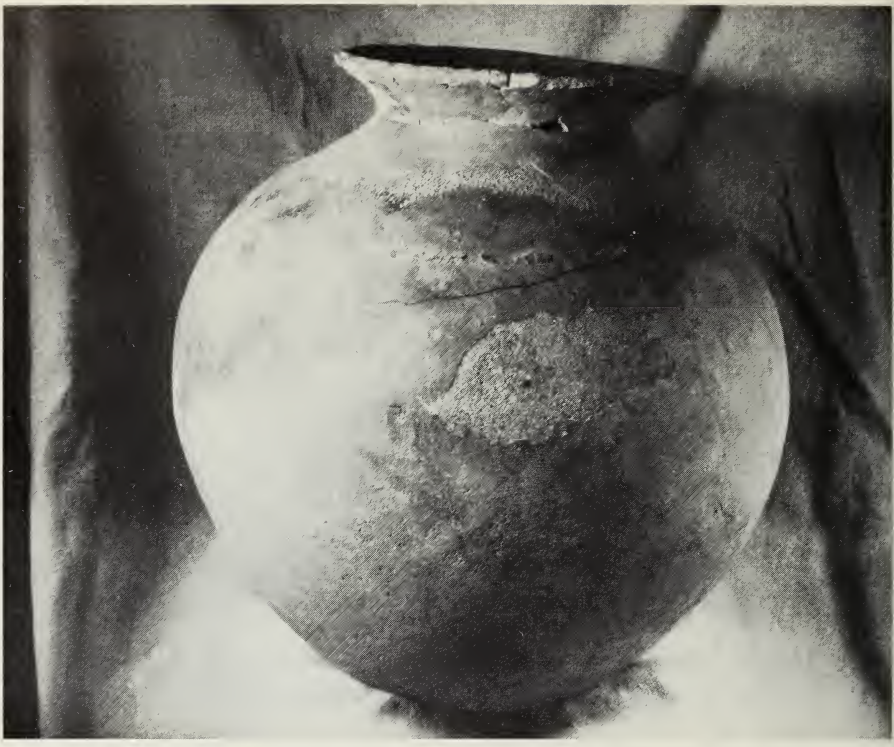

Plate 7 Large unslipped jar with impressed appliqué fillet; height 62.4 cm. This vessel is visible at the right side of the group in Plate 6.

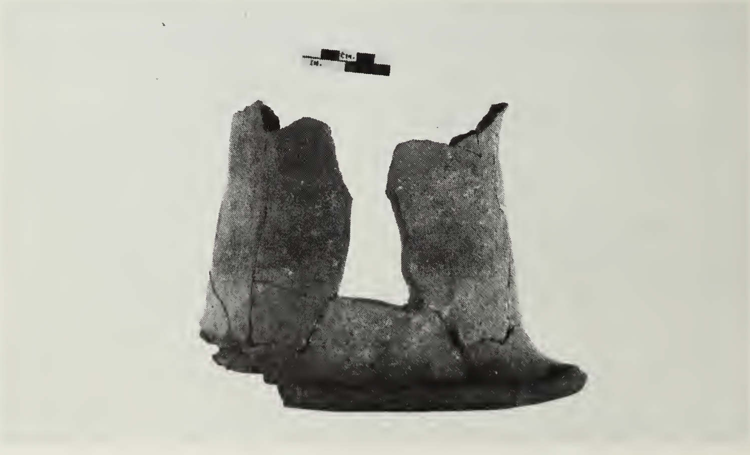

Plate 8 Fragment of the base of a lidded incensario. Note vent cut into the body.

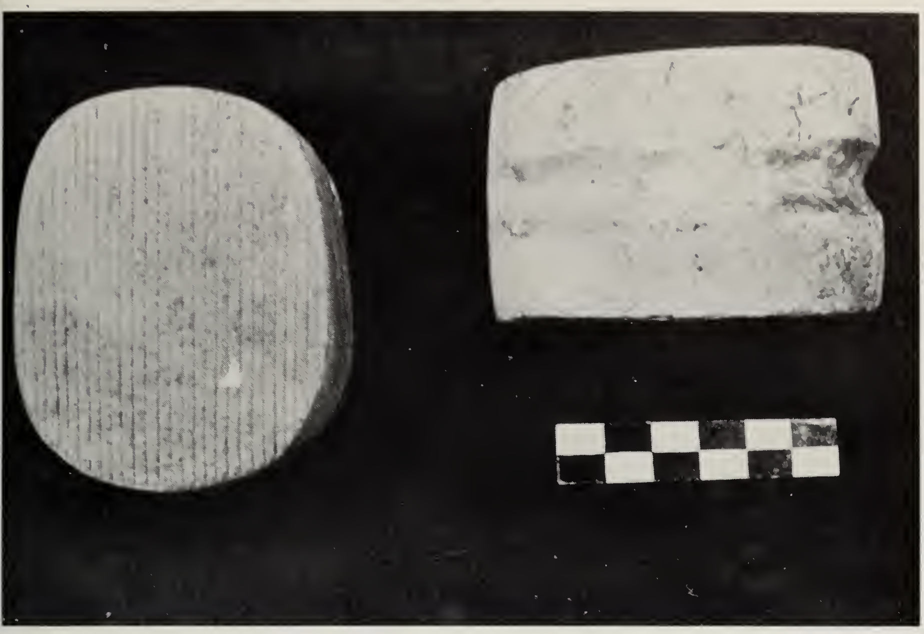

Plate 9 The pair of bark beaters from Cache 2 in Chamber 1.

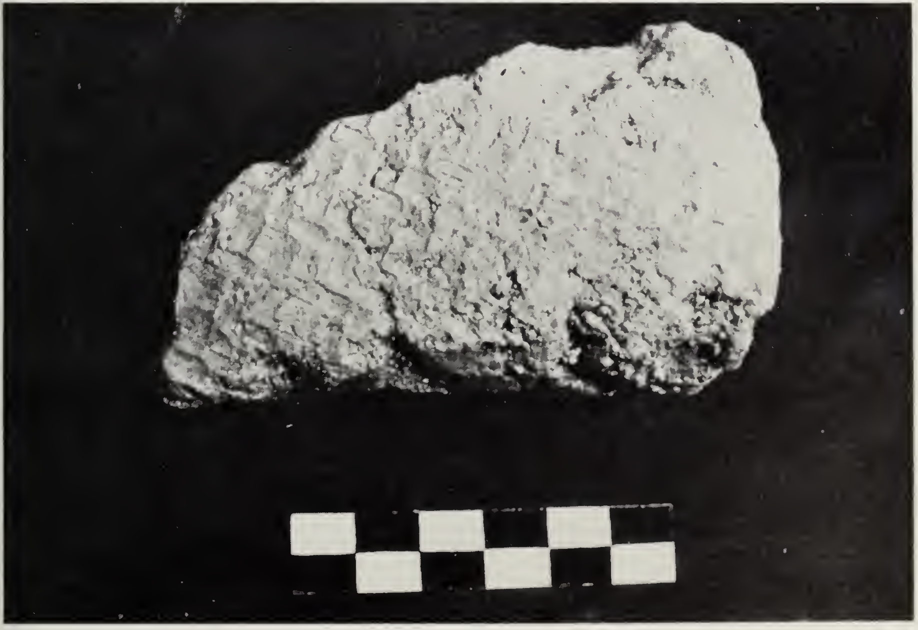

Plate 10 A portion of the clay which underlay the vessel group and cache in Chamber 6, with impression of a twill-plaited mat.

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